

WALK-THROUGH SURVEY REPORT:  
CONTROL TECHNOLOGY FOR BAG OPENING, EMPTYING, AND DISPOSAL

AT  
GLIDDEN COATINGS AND RESINS PLANT  
ATLANTA, GEORGIA

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

PLANT SURVEYED: Glidden Coating and Resins Plant  
1065 Glidden Street, N.W.  
Atlanta, Georgia 30318

SIC CODE: 2851, Paint Manufacturing

SURVEY DATE: May 23, 1983

SURVEY CONDUCTED BY: William N. McKinnery, Jr., P.E., C.I.H.

EMPLOYER REPRESENTATIVES CONTACTED: Mr. Phillip George, Plant Manager  
Mr. Gary Estes, Plant Engineer  
Mr. John Isham, Plant Industrial  
Engineer

EMPLOYEE REPRESENTATIVES CONTACTED: Mr. Paul Johnson, Shop Steward,  
Paintmakers and Industrial Workers  
Local No. 1961

## 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.

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This plant was visited as part of a study of dust control during bag opening, dumping, and disposal. Significant dust exposures can occur during these operations. Although dust can be controlled during bag opening and dumping,

bag disposal is a significant source of worker dust exposure. Ultimately, this project will result in a concise article describing dust control techniques during bag opening, emptying, and disposal. This report should provide valuable information for those who are responsible for controlling the worker's dust exposure.

## II. PLANT AND PROCESS DESCRIPTION

### Plant Description:

This facility was constructed in the mid 1940's and has had frequent modifications and expansions since that time. The plant employs approximately 100 people in the manufacturing of various coatings, i.e. water emulsions, oil base, industrial coatings, gel coats, electro coatings, etc.

Glidden Coatings and Resins Division is a Subsidiary of SCM Corporation. The Glidden Coatings and Resins Division Offices are located in Cleveland, Ohio.

### Process Description:

The various coatings are all made by mixing various liquid and solid materials together to form a liquid material that has the solids thoroughly dispersed. The liquids are pumped into tanks where the solids are added. The dispersion of these solids is accomplished in these large vats. The vats are mechanically stirred and the solid materials are added manually through openings in the vat covers. The material is delivered to the work site via forklift trucks which place the pallets as close as possible to the vat's dump site. To add the solids, the worker removes a bag from a pallet and places it on the ledge of the vat, slits the bag and dumps the material into the vat then places the empty bag on a cart.

### Potential Hazards:

The major ingredients are - clays, titanium dioxide, various silica compounds, diatomaceous earth, calcium carbonate, iron oxide, etc.

### 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 ensure 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.

#### Engineering Controls:

This manual bag opening and disposal operation uses both local and general exhaust to remove or dilute air contaminants generated during the mixing or loading operation. All of the ventilation designs are based on the American Conference of Governmental Industrial Hygienist's Ventilation Manual and were developed in-house.

Specifically, all of the 11 vats used for solids dispersion were designed with ventilation which would produce a face velocity of 200 fpm at the openings where bags are dumped. Each vat is ventilated using a flexible "elephant trunk" type hose to connect the ventilation system to the vat. These hoses are 6-8 inches in diameter and are sized based on the volume of the vat.

General ventilation, designed to provide a minimum of 5 air changes an hour, is also provided.

#### Work Practices:

Workers are encouraged to use good work practices. They are provided instruction when they start the job and then they receive updates as needed. In most cases, the workers move the bags from the pallet to the vat opening, then they slit the bag and let the contents fall into the vat. They shake the bag inside the vat and then remove it and place it on a cart. The cart is taken to a compacting dumpster which is located outside the building.

#### Monitoring:

Employees are given pre-employment physicals and are monitored periodically. There were no monitors in place to detect equipment performance or airborne particulate. Periodic personal and area samples are collected at various locations in the plant. The results of these samples suggest the dust levels are 20-50% of the relevant standard.

#### Personal Protection:

The only personal protective equipment required in the plant are safety glasses with side shields. Safety shoes are encouraged but are not provided. In some cases, gloves and respirators are required. Respirators are provided when required to safely handle specific materials. An organized and coordinated respirator program is in existence. This program includes fit testing.

#### Other Unique Practices:

Initiation of a Hazardous Material Identification System based on the National Paint and Coating Association's System is being implemented throughout the plant. This system allows the workers and the supervisors to know the hazard classification of a material. It also informs them of the personal protective equipment that is required while they are working with that substance.

#### Conclusions and Recommendations:

This plant represents a general type of manual bag opening operations. The ventilation scheme used was not unique but seemed capable of reducing the emission levels to well below the TLV of the materials handled.

I do not recommend this plant for an in-depth survey because the controls do not cover all phases of the bag opening, dumping, and disposal in a manner that would make an in-depth survey fruitful.