WALK-THROUGH SURVEY REPORT

OF

LOWENSTEIN DYES AND COSMETICS

BROOKLYN, NEW YORK

Industrial Hygiene Section
Industry-Wide Studies Branch
Division of Surveillance, Hazard Evaluations, and Field Studies
Cincinnati, Ohio

PLACE VISITED:	Lowenstein Dyes and Cosmetics 420 Morgan Avenue Brooklyn, New York
DATE OF VISIT:	May 23, 1978
PERSONS CONDUCTING SURVEY:	Mark Boeniger, Industrial Hygienist, NIOSH
	Dr. Pierre DeCoufle, Epidemiologist, NCI
	Cindy Robinson, Epidemiologist, NIOSH
PERSONS INTERVIEWED:	Stephen Lowenstein, President
	Irwin Schwartz, Director of Research
	Dr. John Singer, Senior Chemist
UNION:	Distributors Workers of America, District 65

PURPOSE OF VISIT:

Recently the National Cancer Institute demonstrated carcinogenic activity in several aromatic amino compounds used in hair and fur dyes. The purpose of this survey was to observe the compounding and control measures taken during the manufacture of these dyes.

INTRODUCTION

The Lowenstein company is a compounding and wholesale distributor of both acid and oxidative dyes to the fur and cosmetics industry. Sales of acid dyes, which are bought from primary manufacturers and compounded at Lowenstein, predominate. A lesser proportion of oxidative dyes are sold after purifying and compounding these compounds into mixtures. Approximately 60% of the oxidative dyes sold go to the fur industry (exports) and 40% is sold to the cosmetics industry.

DESCRIPTION OF PLANT

Lowenstein Dyes and Cosmetics is historically a small company, founded in 1897. It has been in its present location since 1937. Production workers number 18. An additional nine employees work in three laboratories. The work force is relatively stable and predominantly male.

DESCRIPTION OF PROCESS

The production department is divided into several areas. Adjacent to the shipping and receiving area is a purification department where certain oxidative dye base chemicals and dyes are additionally purified. This room contains a spray dryer, several oven tray dryers, filter press, and centrifuges. Some compounds such as 2,4-diaminoanisole (2,4-DAA) are sulfated. After the 2,4-DAA is converted into the sulfate salt in a reaction vessel at 60°C it is cooled and centrifuged to remove the reaction liquor. The slurry is air dried and the final dry product has a sandy consistancy. All equipment appeared to be adequately vented to rooftop collection devices. Two workers are normally present in this department.

A dry mix blending room contains several ribbon blenders. Acid dyes are compounded in batch quantities for resale. Two or three workers may be stationed in this area when compounding is being performed. Each ribbon blender was equipped with ventilation exhaust at the bagging chute.

Several phenolic bases are sold in a solid form which is less reactive to auto-oxidation. These compounds, such as resorcinol, hydroquinone, and pyrogallol, are melted (~140°C) in a large pot and the melt is drawn off through a tap into metal containers. These containers are placed under an exhaust hood to cool. An extensive ventilation control system has been installed in the melt room to control vapor emissions. Trisodium phosphate is used for the cleanup operation. Only one man is involved in this operation.

Test bench scale quantities of compounds are prepared in a compounding room for latter custom blending in the blending room and melt room. Several employees work in the compounding room.

There are three small research and development laboratories where compounds are formulated for the cosmetic, fur, and tanning industries.

POTENTIAL HEALTH HAZARDS

Engineering controls and the general plant housekeeping appeared good. All of the production workers in potentially dusty job areas have been provided an approved half-face respirator with organic vapor-dust canister. Respirators are kept in closed containers when not in use. Elbow length rubber gloves are also available.

No formal industrial hygiene program exists in this facility although a basic safety program is maintained by the management.

There may be a potential health hazard due to the large number of oxidative bases and acid dyes present. Many phenolic compounds are readily absorbed through the skin. They may cause dermatitis (especially among those who are sensitive), methemoglobinemia, leukopenia, and anemia. Phenolic compounds can affect the central nervous system, liver and kidneys after repeated high exposures. The aromatic nitro and amino compounds are less readily absorbed through the skin and pose less of a potential health hazard. The phenylenediamines, the aminophenols, and 2,4-diaminotoluene are common oxidative base compounds, However, documented human response to these compounds is primarily limited to skin effects such as contact dermatitis. In addition, p-phenylenediamine is a potent skin and respiratory sensitizer and strong allergic reactions may occur after exposure.

Many of the common simple oxidative components used in hair dye preparations have exhibited mutagenic activity. In addition, some occasional oxidative components as 2,4-diaminoanisole, 2,4-diaminotoluene, 2-nitro-p-phenylenediamine and 4-amino-2-nitrophenol have been implicated as animal carcinogens. Currently there are no known studies relating the above compounds to cancer in humans.

The toxicity of acid dyes as a class is similarly not known. The highly sulfonated character of these dyes would make them less likely to be skin absorbable and not readily absorbed if ingested, however, the extent of systemic uptake from inhalation of dye particles is unknown.

FUTURE NIOSH ACTIVITY

NIOSH is currently analyzing bulk oxidative hair dyes for the base compounds which have previously been identified as being carcinogenic. If appropriate analytical methods can be provided, NIOSH should begin monitoring potentially exposed workers through biological sampling techniques. The Lowenstein Company presents a potentially exposed population of workers and may satisfy the requirements of such a monitoring program if such a program is developed.