FILE COPY

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
CINCINNATI, OHIO 45202

HEALTH HAZARD EVALUATION DETERMINATION
REPORT NO. 72-115-77

B & G PRODUCTS COMPANY
ST. PAUL, MINNESOTA
SEPTEMBER, 1973

I. TOXICITY DETERMINATION

It has been determined that the presence of 2, 4-Dichlorophenoxyacetic acid (2, 4-D) in or near the work areas of the B & G Products Company does not constitute a potential health hazard to the employees. This determination is based upon observation of the work areas, employee-employer interviews, consideration of the quantity of 2, 4-D involved, the location of the 2, 4-D processing with respect to the affected employees, medical data from research and investigation, and contact with a number of other city, county, state, and federal agencies who have previously investigated the situation.

II. DISTRIBUTION AND AVAILABILITY OF DETERMINATION REPORT

Copies of this Determination Report are available upon request from the Hazard Evaluation Services Branch, NIOSH, U.S. Post Office Building, Room 508, 5th and Walnut streets, Cincinnati, Ohio 45202. Copies have been sent to:

a) B & G Products Company
St. Paul, Minnesota

b)
b) Authorized Representative of Employees

c) U.S. Department of Labor - Region V

d) NIOSH Regional Program Director, Region V, Chicago, Illinois

For the purposes of informing the two "affected employees," the employer will promptly "post" the Determination Report in a prominent place(s) near where affected employees work for a period of 30 calendar days.

III. INTRODUCTION

Section 20(a)(6) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 669(a)(6), authorizes the Secretary of Health, Education, and Welfare, following a written request by any employer or authorized representative of employees, to determine whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found.

The National Institute for Occupational Safety and Health (NIOSH) received such a request from an authorized representative of employees regarding exposure to 2, 4-Dichlorophenoxyacetic acid at the B & G Products Company, St. Paul, Minnesota.

The request initiated from an employee claiming an allergy to 2, 4-D, causing stomach and colon burn, diarrhea, and burning sensations of the arms, neck, eyes, and face, as well as itching all over.

IV. HEALTH HAZARD EVALUATION

A. Plant Process - Conditions of Use

The B & G Products Company manufactures embalming fluids and cosmetics utilized by morticians. There is one employee engaged in the manufacturing process, and another employee involved in the labeling and preparation for shipment of the products. The processing area is located on the second floor of a sizable warehouse building. The 2, 4-D is processed by the Aquacide Company, located on the third floor of the same building, and directly above B & G Products Company. The 2, 4-D is combined with inert ingredients to produce a pelletized herbicide known as Aquacide. One employee of B & G may become involved with the labeling and preparation for shipment of the Aquacide in prepackaged containers, usually one-gallon, metal cans incased in cardboard boxes. B & G employees do not participate in the manufacture of Aquacide, which is processed approximately 20 times per year.

B. Evaluation Design

On April 26, 1973, NIOSH representatives, including an industrial hygienist and a medical officer, conducted an observational survey of the facility. Pertinent information was obtained from the employer regarding the processes, employees were interviewed and examined by the medical officer for evidence of dermatologic disease, and work area conditions and procedures were observed.

Subsequent to the plant visit, contacts were made with persons who have been involved with previous investigations of the facility and/or employees.

C. Evaluation Criteria

The currently acceptable Occupational Health Standard as promulgated by the U.S. Department of Labor (Title 29, Chapter XVII, Part 1910, Subpart G, Section 1910.93, Table G-1) applicable to 2, 4-D is 10 mg/M^3 (approximate milligrams of particulate per cubic meter of air).

Occupational health standards for individual substances are established at levels designed to protect workers who are occupationally exposed on and 8-hour-per-day, 40-hour-per-week basis over a normal working lifetime. Evaluation of exposures to multiple contaminants requires assessment of "total exposures" with regard to combined, potentiated, or inhibited toxic effects.

The manufacture of embalming fluids and cosmetics involves the use of more than fifty different chemical substances.

Two, 4-Dichlorophenoxyacetic acid has been studied in regard to its toxicity. Rowe and Hymes[1] concluded that 2, 4-D had a low chronic toxicity. The oral LD50 values for several animal species ranged from 100 to 1,000 milligrams per killigram, with the later the most commonly recognized.[2] Lahman[3] reported that a dietary level of 1,000 parts per million for thirty weeks produced tissue damage, but no gross effects on rats.

Most of the acute toxicological symptomatology have been following solutions of esters of 2, 4-D or the amine salts of 2, 4-D and not pure 2, 4-D. Dr. E. J. Kraus[4] reported that the human adults had taken daily by mouth 500 milligrams of pure 2, 4-D either after the mid-day or evening meals during a period of 21 days without experiencing ill effects. It is important to realize that the relative toxicity varies when talking about the esters in contrast to pure 2, 4-D. The 2, 4-D used in Aquacide is 99% pure.

Aquacide is processed in a room remote from the manufacturing area of B & G Products - actually, one floor apart. The processing is normally performed on weekends when B & G does not operate and relatively small quantities of 2, 4-D are used. Also, the processing of Aquacide is of a sporadic and/or seasonal (or "as required") nature.

Because of the above factors and because good housekeeping and generally good work practices were observed at the B & G Products Company, no environmental samples were collected.

D. Evaluation Results and Discussion

Medical examination indicated an employee's hands and forearms showed erythema and dryness. The lid margins were also slightly red. Another employee indicated very occasional redness around the edges of the eyes. All other employees, office workers who occasionally enter the work areas, did not express any symptomatology regarding their work. A patch test administered by a private physician to an employee did not indicate a positive reaction to 2, 4-D.

The host of irritant chemicals with which the employees work daily probably account for occasional irritation and dermatitis.

Protective equipment, such as gloves which are provided, should be utilized by the employees when handling irritating chemicals. Medication precribed for sensitive employees should be used as directed by a physician.

V. REFERENCES

1. Rowe, V.K.; Hymes, T.A. - American Journal of Veterinary Research, Vol. 15, 0. 662, (1954).

2. Hill, D.; Carlile, H. - Hournal of Industrial Hygiene and Toxicology, Vol. 29, p. 85 (1947).

3. Lahman, A.J. - Quarterly Bulletin Assn. Food & Drug Office, Vol. 16, p. 47 (1952).

4. John H. Seabury - Toxicity of 2, 4-D for Man and Dog. Arch. of Envir. Health, Vol. 7, pp. 202-209, August, 1963.

VI. AUTHORSHIP AND ACKNOWLEDGMENTS

Report Prepared By: Richard S. Kramkowski
Regional Industrial Hygienist
Region V; Chicago, Illinois
Project Officer

Medical Evaluation: Edward Shmunes, M.D.
Medical Services Branch
Cincinnati, Ohio
Principal Medical Officer

Originating Office: Jerome P. Flesch, Chief
Hazard Evaluation Services Branch
Cincinnati, Ohio