U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
CENTER FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
CINCINNATI, OHIO 45226

HEALTH HAZARD EVALUATION DETERMINATION
REPORT NO. 75-185-300

Litho Art Inc.
175 Varick Street
New York, N.Y.

JUNE, 1976

I. TOXICITY DETERMINATION

On the basis of an evaluation of routine operating conditions including the limited use of chemical substances during a health hazard evaluation conducted at Litho Art Inc. on January 9, 1976, it was determined that the workers were not exposed to hazardous concentrations of airborne contaminants. A medical investigation was performed on February 12, 1976, in response to allegations that lithographic strippers are in contact with unknown toxic substances that cause skin rashes on their hands, subsequently limiting their ability to work. While the results of the medical investigation revealed some abnormalities of the skin of the hands, it did not appear that these conditions represented occupational contact dermatitis. Nevertheless, recommendations for better hand care are being made.

II. DISTRIBUTION AND AVAILABILITY OF DETERMINATION REPORT

Copies of this determination report are available upon request from NIOSH, Division of Technical Services, Information Resources and Dissemination Section, Robert A. Taft Laboratories, 4676 Columbia Parkway, Cincinnati, Ohio 45226. Copies have been sent to:

a) Litho Art Inc.
b) Authorized Representative of Employees
c) U.S. Department of Labor, Region II
d) NIOSH, Region II

For the purpose of informing the seven (7) affected employees, the employer shall promptly post the Determination Report in a permanent place(s) readily accessible to workers 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 an 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 received such a request from an authorized representative of employees of Litho Art Inc. alleging that the lithographic strippers are in contact with unknown toxic substances that produce skin rashes on the hands, thereby preventing these workers from performing their duties. The employees are members of Local 1 of the Amalgamated Lithographers of America.

IV. HEALTH HAZARD EVALUATION

A. Plant Process - Conditions of Use

Litho Art Incorporated employs five (5) lithographic strippers on the day shift and two (2) on the second shift. They work on glass-topped tables situated in a room which is about 60 ft. by 50 ft. by 11 ft. high. Air is supplied to the room through two air conditioning and heating systems. The work consists of layout operations in which plastic sheets and photographic negatives are handled manually. Photographic film negatives are mounted by cellophane type (Scotch (R) tape) to mylar sheets which are in turn pinned to a separate, ruled mylar layout sheet. (The use of registered trade names does not constitute an endorsement by either NIOSH or the U.S. Public Health Service.) A sheet of "Ruby Red," which consists of a double layer of plastic film is then pinned to the top of the negative assembly, and sections corresponding to the black or white areas in the negative assembly are cut in the overlying "Ruby Red" by means of a razor blade. The red "skin" is then peeled away. At this time another sheet, called "Golden Plast" is taped to the assembly and a razor blade is used to cut away other sections. These negative assemblies are now ready for the photographic plate department. From 20 to 100 negative assemblies may be prepared each month.

As part of this assembly work, a solvent, called "Film-Kleen"(R) (containing 90% unspecified aliphatic hydrocarbons and 10% isopropyl alcohol) may be applied by absorbent paper or directly to the plastic layers to clean them of dirt. As much as 2 quarts of Film Kleen(R) per week may be used. About 12 ounces of rubber cement (containing about 91% hexane and 9% natural rubber) and small quantities of rubber cement thinner (hexane) per week per

man also may be used. The cement is applied by brush. Other substances used include small quantities of Clorox which may be swabbed on the negatives once a week to remove emulsion and a substance called "Opaque" which is applied by brush to retouch negatives. "Opaque" is a paste containing lampblack and ammonium hydroxide which is diluted with water prior to use.

B. Evaluation Design

An initial survey was conducted by a NIOSH industrial hygienist on January 9, 1976. The hazard evaluation request was discussed with management and a representative of the employees, and non-directed interviews were conducted with the three lithographic strippers working on the premises to determine if any health problems existed that could be attributed to their occupation. These initial interviews indicated the occurrence of possible occupationally related skin problems among the lithographic strippers. After observing and analyzing the details of the operations, including the minimal use of chemical materials, it was obvious that under routine conditions the lithographic strippers would not be exposed to hazardous concentrations of airborne contaminants. Therefore, air samples were not taken. The manufacturers of the film cleaning agent, rubber cement and rubber cement thinner were contacted to determine the chemical composition of these substances.

On February 12, 1976, a NIOSH medical officer conducted a medical investigation to appraise the nature of the employee's skin problems and to ascertain whether the skin conditions complained of were occupationally related.

C. Evaluation Criteria

The liquid aliphatic hydrocarbons, including hexane, are fat solvents and primary skin irritants. Repeated or prolonged skin contact will dry and defat the skin, resulting in irritation and dermatitis. Only slight erythema may result when isopropyl alcohol contacts the skin.

D. Medical Evaluation Results

Six (6) lithographic strippers who worked on the first and second shifts were interviewed and examined. Their ages ranged from 38 to 58 years (mean age, 49 years). Their length of employment as lithographic strippers ranged from 16 to 29 years (mean duration, 24 years). Their length of employment as lithographic strippers at Litho Art Inc. ranged from two weeks to 20 years.

All of the work done by the lithographic strippers is done by hand. The work involves meticulous detail in proper cutting, pasting, handling, and taping of plastic sheets and film negatives. Consequently the use of gloves or barrier creams is virtually impossible. By their own admission and by observations, employee's exposure to agents other than cellophane tape is minimal. Cellophane tape is commonly applied to several fingers prior to taping negatives and plastic film.

Except for two individuals, none of the lithographic strippers described any skin conditions which they specifically related to their work. One person related dryness, roughening, and cracking of the skin on his fingers that has waxed and wannedfor the last three years. Cutaneous examinations revealed some minimal dryness and cracking of the skin on both thumbs. The other and most severely affected person has had a chronic dermatitis for the past seven years. He has worked at Litho Art for the past 18 years and has been a lithographic stripper for almost 40 years. His dermatologic problem began about seven years ago with a rash on the palm of his right hand which has gradually spread to involve both hands. The right hand is more severely involved than the left and the fingers of both hands are about equally involved. Patch tests done seven years ago were reported to be negative. His condition use to get better on vacation, but about one year ago, no change was noted during the vacation periods. He now uses corticosteroid cream, special soap and cotton gloves with the fingertips cut off. He states his condition has improved on this regimen. Examination revealed hypertrophy, drying and scaling of the skin of the right palm with less extensive involvement of the fingers of both hands. His ability to work was definitely not impaired on the day of the NIOSH visit. It is quite possible that this condition may represent palmar psoriasis or one of the genodermatosis, such as palmar keratosis. From the history and examination, it did not appear to be an occupational contact dermatitis. However, for further elucidation a skin biopsy would be helpful.

The rest of the cutaneous examinations revealed instances of cracking, dryness, and excoration of a minor degree. No instances of occupation contact dermatitis by history or examination were found.

In conclusion, except for one instance of rather severe hand dermatitis, dermatitis of a very mild and limited nature was found among the workers. Findings included cracking, dryness, and minimal excoriation. However, histories and physical examinations did not suggest an allergic condition.

E. Recommendations

In view of the specialized nature of their work, and the fact that gloves and barrier creams cannot be used, it is recommended that these men wash their hands several times per day with a mild soap and dry meticulously. In addition, the liberal use of hand lotions containing lanolin and/or vaseline is to be encouraged.

V. References

1. International Labour Office: Encyclopeida of Occupational Health and Safety, Volume I, Geneva, Switzerland, 1971, pps. 73-687.

VI. Authorship and Acknowledgments

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