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

HEALTH HAZARD EVALUATION DETERMINATION
REPORT NO. 75-1-194

STORM PRODUCTS COMPANY
PALO ALTO, CALIFORNIA
MAY 1975

I. TOXICITY DETERMINATION

It has been determined that a potential health hazard may exist in the extrusion area from vinyl chloride gas at the concentrations measured during near-normal operating conditions although this determination could not be conclusively made. The determination is based on several factors: 1) 5 out of 6 environmental measurements showed undetectable levels of vinyl chloride gas but the remaining sample showed a level at the lower limit of detection (0.2 ppm) for the method used; 2) NIOSH rejected the concept of a threshold limit for vinyl chloride gas since there is probably no threshold for carcinogenesis; 3) the limited time the extruder is in operation; 4) and the fact that the overhead canopy hood which provides a source of local exhaust ventilation was not in operation.

NIOSH recommends that the employer reduce airborne concentrations of vinyl chloride to levels not detectable by the recommended method, and that any employee who is exposed to measurable concentrations of vinyl chloride should wear an air supplied respirator or other appropriate respirator approved by NIOSH for such use.

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, Fifth and Walnut Streets, Cincinnati, Ohio 45202. Copies have been sent to:

a. Storm Products Company, Palo Alto, California.
b. U.S. Department of Labor - Region IX.
c. NIOSH - Region IX

For purposes of informing the one "affected employee", the employer will promptly "post" the Determination Report in a prominent place(s) near where the exposed employee works 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 an employer regarding exposure of an employee to vinyl chloride gas at the Storm Products Company, Palo Alto, California.

IV. HEALTH HAZARD EVALUATION

A. Introduction

The Storm Products Company produces and distributes finished cables of all diameters from raw wire or previously manufactured cable. An evaluation of the cable extrusion operation was requested by management.

B. Plant Process - Condition of Use

On February 3, 1975, NIOSH investigator, Melvin T. Okawa, conducted a conference with a representative of management as an introduction to the hazard evaluation. A preliminary walk-through survey of the extrusion area was performed.

A small extruder is located in one corner of the plant which is about 2,500 square feet in size. Wire is run off of a spool through the extruder, coated with plastic and rewound as the finished product. A small local exhaust canopy hood is located above the extruder. One worker is responsible for the extrusion operation. Polyvinyl chloride (PVC) is not the only coating material and a review of the machine log indicated that PVC is run about twice a week for 1-4 hours at a time. The PVC is run only when there is a demand for a certain type of cable.

C. Evaluation Criteria

Vinyl chloride is now suspected as being an etiological agent in the development of angiosarcoma of the liver. Based on theoretical considerations, as stated in NIOSH's Recommended Standard for Occupational Exposure to Vinyl Chloride[1], "there is probably no threshold for

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[1] "NIOSH Recommended Standard for Occupational Exposure to Vinyl Chloride," March 14, 1974, memorandum from Director, NIOSH to Assistant Secretary of Labor, OSHA.

carcinogenesis although it is possible that with very low concentrations, the latency period might be extended beyond the life expectancy. In view of these considerations and NIOSH's inability to describe a safe exposure level as required in section 20(a)(3) of the Occupational Safety and Health Act, the concept of a threshold limit for vinyl chloride gas in the atmosphere was rejected."

D. Worksite Evaluation

On February 3, 1975, Mr. Okawa conducted an environmental evaluation for vinyl chloride in the extrusion area. A special purchase of PVC was made by management so that the operation would run for several hours and representative air samples could be collected. During the day of the evaluation, the local exhaust ventilation was not in operation but it normally runs at all times.

E. Evaluation Methods

The employee's exposure to VC was measured via personal air sampling equipment. Breathing zone samples were obtained using Sipin Personal Sampler pumps and charcoal air sampling tubes. The sampling rate for VC was 42 cc/minute and the sample volumes ranged from 1.8-2.5 liters. The charcoal tubes were sealed and mailed immediately to NIOSH laboratories in Salt Lake City for analysis.

F. Evaluation Results

On February 3, 6 breathing zone samples for VC were collected while the extruder was in operation with PVC. VC was not detected in samples 1 and 2, a VC level of 0.2 ppm (lower limit of detection for the method used) was found in sample #3, and VC was not detected in samples 4-6.

V. CONCLUSIONS

The Federal Standard for vinyl chloride gas promulgated by the U.S. Department of Labor is 1.0 ppm based on an 8-hour time-weighted average. This standard also calls for specific steps by an employer when the 8-hour time-weighted average exceeds the "action level" of 0.5 ppm. The average in the extrusion area is well below the 1.0 ppm standard and the 0.5 ppm "action level." Also, the extrusion operation with PVC only runs several hours per week and not every day. However, the one positive sample cannot be disregarded in view of NIOSH's stand of no threshold limit for carcinogenesis. Therefore, it is concluded that there may exist a potential health hazard from vinyl chloride in the extrusion area of the plant.

VI. RECOMMENDATIONS

It is recommended that the employer reduce airborne concentrations of vinyl chloride to levels not detectable by the recommended method of sampling. Any employee who is exposed to measurable concentrations of vinyl chloride should wear a respirator approved by NIOSH for protection against vinyl chloride until it is assured that vinyl chloride exposures are controlled.

VII. AUTHORSHIP

Evaluation conducted and report prepared by:

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