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

HEALTH HAZARD EVALUATION DETERMINATION
REPORT NO. 74-134-193

PHC INDUSTRIES, INC.
CAMDEN, NEW JERSEY 08103
MAY 1975

I. TOXICITY DETERMINATION

It has been determined on the basis of environmental sampling that a health hazard from exposure to vinyl chloride monomer did not exist within the worksite area where manufacturing of handles from PVC resins is carried out by use of molding and extrusion processes. The investigation was conducted on February 12, 1975 during normal process operations and no levels of vinyl chloride were detected. The lower limit of detection for vinyl chloride in the method used is approximately 0.2 ppm.

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) PHC industries, Inc., Camden, New Jersey
b) Authorized Representative of Employees
c) U.S. Department of Labor - Region II
d) NIOSH - Region II

For purpose of informing the approximately 9 "affected employees" this report shall be posted in a prominent place readily accessible to workers for a period of at least 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 (NIOSH) received such a request from the employer regarding exposure to vinyl chloride at PHC Industries, Inc., Camden, New Jersey.

IV. HEALTH HAZARD EVALUATION

A. Condition of Use

PHC Industries manufacture handles from PVC resins. Handles are manufactured by two methods, molding and extrusion. The plant uses PVC resins in the form of pellets which are heated in ovens before introduction into the process. After heating, the resins are mixed with any of a variety of color concentrates and transferred to the molding or extrusion machines. The operation from this stage is completely enclosed. The resin is then subjected to an increase in temperature and pressure and either forced into molds or extruded into strips. There are nine employees in the area on an 8-hour shift, 5-days per week.

B. Evaluation Methods

Air samples were collected using charcoal tubes in the breathing zone of the exposed workers and in various areas where it was thought the highest concentration of vinyl chloride would be produced, e.g. around the ovens and also in the area of the molding and extrusion machines. Sampling rates were approximately 50 cc/minute and sample volumes ranged from 5.8 to 12.6 liters of air. The charcoal tubes were sealed and sent to the NIOSH laboratories in Salt Lake City for analysis. A total of 24 samples for vinyl chloride were collected.

C. Evaluation Criteria

Vinyl chloride is considered a carcinogenic agent. It is suspected of being the etiological agent in the development of angiosarcoma of the liver (a rare form of liver cancer). As stated in NIOSH's Recommended Standard for Occupational Exposure to Vinyl Chloride, "there is probably no threshold for 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. As a result, the NIOSH Recommended Standard for Occupational Exposure to Vinyl Chloride states that exposure to vinyl chloride monomer should not exceed levels that are detectable by the recommended methods of sampling and analysis.

D. Evaluation Results and Discussion

A summary of air sampling data and results for vinyl chloride is presented in Table I.

Sixteen personal breathing zone samples were taken on the employees working in the molding and extruding area. No vinyl chloride was detected in any of the samples. The limit of detection for vinyl chloride was 0.2 ppm. Two general area samples were taken near the ovens and six general area samples were collected near the molding and extruding machines. Vinyl chloride was not detected. Therefore, based on the criteria outlined in Part C, it was determined that no vinyl chloride hazard existed.

V. AUTHORSHIP AND ACKNOWLEDGMENTS

Report Prepared By:

Dawn Gilles
Industrial Hygienist
Hazard Evaluation Services Branch
Cincinnati, Ohio

Originating Office:

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

Acknowledgments

Analytical Laboratory Services: Western Area Occupational Health Laboratory

Environmental Evaluation:

Raymond Rivera
Industrial Hygienist
Hazard Evaluation Services Branch
Cincinnati, Ohio

TABLE 1

CHARCOAL TUBE DETERMINATION
FOR VINYL CHLORIDE

PHC INDUSTRIES, INC.
CAMDEN, NEW JERSEY

February 12, 1975

Sample Location	Sample No.	Sampling Period	Sample Volume (liters)	Vinyl Chloride (ppm)
Molding Machine Operator	1	8:00 - 10:13	7.13	N.D.*
	13	10:13 - 1:38	6.70	N.D.
Materials Handler	2	8:00 - 10:18	9.88	N.D.
	14	10:18 - 1:41	9.79	N.D.
Molding Machine Operator	3	8:05 - 10:22	5.82	N.D.
	15	10:22 - 1:44	11.8	N.D.
Foreman	4	8:06 - 10:25	10.2	N.D.
	16	10:25 - 1:57	8.79	N.D.
Extrusion Machine Operator	5	8:10 - 10:40	8.60	N.D.
	17	10:40 - 1:59	10.2	N.D.
Extrusion Machine Operator	6	8:10 - 10:29	8.28	N.D.
	18	10:29 - 1:49	10.6	N.D.
Foreman	7	8:12 - 10:32	11.1	N.D.
	19	10:32 - 1:52	6.82	N.D.
Foreman	12	8:28 - 10:37	7.02	N.D.
	20	10:37 - 1:36	12.6	N.D.
Area by Ovens	8	8:13 - 10:48	8.37	N.D.
	22	10:48 - 2:01	8.46	N.D.
Area by Styrene Machine	9	8:15 - 10:55	11.2	N.D.
	24	10:55 - 2:06	6.97	N.D.
Area by Extrustion Machines	10	8:20 - 10:53	5.97	N.D.
	23	10:53 - 2:04	9.69	N.D.
Area between Molding Machines	11	8:23 - 10:44	8.81	N.D.
	21	10:44 - 1:59	9.37	N.D.

*N.D. - Not Detected; limit of detectability = 0.2 ppm