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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 HE 79-18-627

STANDARD FOLDING CARTONS, INC.  
85TH ST. & 27TH AVENUE  
JACKSON HEIGHTS, NEW YORK 11372

NOVEMBER 1979

I. TOXICITY DETERMINATION

A Health Hazard Evaluation was conducted by the National Institute for Occupational Safety and Health (NIOSH) at Standard Folding Carton, Inc., 85th St. and 24th Avenue, Jackson Heights, Queens, New York 11372, to determine exposure to chemical compounds at the bacon carton assembly line. Methodology used in the evaluation include 1) environmental sampling, 2) employee interview, 3) laboratory analysis, and 4) literature review.

Results of the hazard evaluation indicate exposures to airborne concentrations of approximately one part of trichloroethylene vapor per million parts of air exhaust at the bacon line. No trace of any of the constituents of the "hot wax" used in the bacon container line was found. Under conditions existing at the time of the survey, no significant health hazard was determined.

II. DISTRIBUTION AND AVAILABILITY OF DETERMINATION REPORT

Copies of this report are currently available upon request from NIOSH, Division of Technical Services, Information and Dissemination Section, 4676 Columbia Parkway, Cincinnati, Ohio 45226. After 90 days, the report will be available through the National Technical Information Service (NTIS), Springfield, Virginia 22161. Information regarding its availability from NTIS can be obtained from NIOSH's Publication Office at the Cincinnati address. Copies of this report have been sent to:

1. The requestor of the evaluation
2. AFL Local 381, Paper Corrigators Union
3. Standard Folding Cartons, Inc.
4. U.S. Dept. of Labor, OSHA, Region II
5. U.S. Dept. of HEW, NIOSH, Region II

III. INTRODUCTION

Section 20 (a) (b) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 669 (a) (b), 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 in the place of employment may have toxic effects as it is used or may be found.

NIOSH received such a request from employees of Standard Folding Cartons, Inc. concerning exposure to compounds generated at the bacon carton assembly line.

IV. EVALUATION

A. Description of the facility

Standard Folding Cartons, Inc. occupies an 85,000 square foot facility which will, based on the customer's needs, print, score, glue, assemble and box cardboard containers. The printing section of the plant is essentially separate from the finishing/assembly area. The center of the facility is used for storage. The finishing/assembly area is along 2 sides of the plant. The ceiling is approximately 25-30 feet high. The work area which contains the bacon carton lines is approximately 40 ft. wide and 150 ft. long. The bacon carton line is near the center of the work area. The assembly line is crook shaped. Printed "blanks" are fed manually into the longer (30 ft.) leg, where they are scored. An employee then manually transfers the scored blanks onto the shorter leg (20 ft.) where they are glued. Two employees then transfer the completed cartons into shipping cartons and onto a conveyor to the shipping department. The wax used in the bacon carton line is "Hot Melt" #18-7611, manufactured by United Resins of Brooklyn, N.Y. Pellets (3/4 in. X 3/4 in. X 1/4 in.) are heated and the melted wax is drizzled onto the containers. The melt pot and the immediate area of the assembly line is provided with an exhaust hood.

B. Sampling Rationale

Information supplied by the manufacturer and obtained by analysis of melted bulk samples identified the Hot Melt Wax as high molecular weight alkanes (C<sub>25</sub> H<sub>52</sub> and above); small amounts of lower molecular weight alkanes (C<sub>9</sub> - C<sub>11</sub>), butylated hydroxytoluene (an antioxidant), pinene (a terpene) and some other unsaturated hydrocarbons, probably polyterpene-type resins. In simple words, the "hot melt wax" consisted of parafin wax, a common food preservative - butylated hydroxytoluene (BHT) and a small amount of turpentine-related solvents, probably natural in origin. The wax and BHT are relatively innocuous. The parafin wax has a very low vapor pressure, which means that

very little gets into the air. Butylated hydroxytoluene is a widely used food additive which has been found to exacerbate conditions of asthma in previously chemical sensitized individuals! The solvents, in general are anesthetics and central nervous system depressants with a relatively low order of acute toxicity. They do not tend to accumulate in body tissues, so that cumulative toxicity from repeated exposure to low concentrations is improbable.

C. Sampling procedure

Because of the movement of the stacker and packers in this line, it was decided not to collect breathing zone samples, but to collect general air samples near the melt pot, adjacent to the stacker near the center of the line (the individual nearest the melt pot), and a few feet away from the line.

Samples were collected using tubes containing activated charcoal. Air is drawn thru the tubes at a known sampling rate (about 200 cubic centimeters per minute). Solvent vapors contained in the air will be adsorbed onto the charcoal particles. The tubes are subsequently analyzed using a standardized gas chromatographic method which can both identify and quantify the solvent(s) present.

D. Sampling results

No trace of any of the constituents of the "hot wax" was found in any of the samples. See table 1.

The only concentration of an organic chemical which could be detected was one part per million or less of trichloroethylene a common industrial solvent. The presence of trichloroethylene may be explained by improperly dried inks in the printing on the bacon containers, some cleaning solution in use in the plant, or by some fugative emissions from a near-by bus repair depot.

V. RECOMMENDATIONS

Based on the results of sampling, no recommendations are considered necessary.

VI. REFERENCES

1

Fisherman, E.W., and Cohen, G.N., Alpha-Beta-Adrenergic Imbalance in Intrinsic-Intolerance Rhinitis or Asthma. Annals of Allergy, Vol. 33, pp 86-101, Aug. 74.

2

Industrial Hygiene & Toxicology, Second Edition, 1967, Frank A. Patty, Editor, Volume II, pages 1207 - 1208, Interscience Publishers, New York.

VII. AUTHORSHIP - ACKNOWLEDGEMENTS

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Table I  
 Standard Folding Cartons, Inc.  
 Concentration of Trichloroethylene

<u>Location</u>	<u>Sample Volume (liters)</u>	<u>Concentration (P.P.M.)</u>
Ledge 4 feet from center of conveyor.	22.7	1.0
Center of conveyor line, upstream from melt pot.	21.0	1.6
Stacker area	23.0	1.1
Center of conveyor line, downstream from melt pot.	24.8	1.1

OSHA Standard = 100 parts of trichloroethylene per million parts  
 of air (P.P.M.), Time Weighted Average for  
 daily exposure.

NIOSH Recommended Standard = 50 P.P.M., Time Weighted Average for  
 daily exposure.

Limit of detection = approximately 0,2 P.P.M.