U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES ■ Public Health Service
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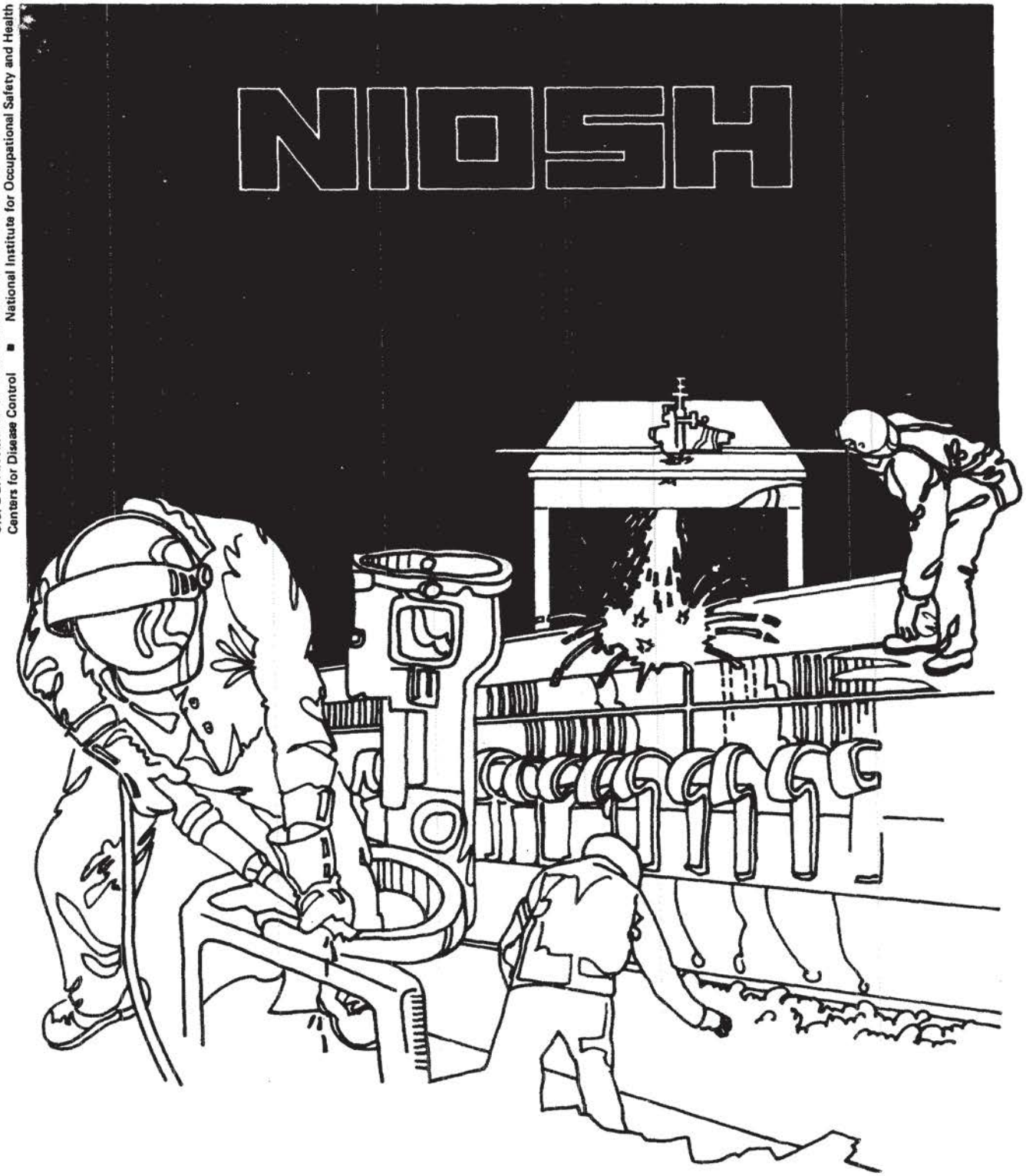
NIOSH



Health Hazard Evaluation Report

HETA 82-085-1113
JAPAN ECONOMIC INSTITUTE OF AMERICA
WASHINGTON D.C.

PREFACE

The Hazard Evaluations and Technical Assistance Branch of NIOSH conducts field investigations of possible health hazards in the workplace. These investigations are conducted under the authority of Section 20(a)(6) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 669(a)(6) which authorizes the Secretary of Health and Human Services, following a written request from 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 Hazard Evaluations and Technical Assistance Branch also provides, upon request, medical, nursing, and industrial hygiene technical and consultative assistance (TA) to Federal, state, and local agencies; labor; industry and other groups or individuals to control occupational health hazards and to prevent related trauma and disease.

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NIOSH INVESTIGATOR:
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I. SUMMARY

On December 16, 1981, the National Institute for Occupational Safety and Health (NIOSH) received a request for a Health Hazard Evaluation from the Japan Economic Institute of America, Washington, D.C., to evaluate an employee's solvent exposures during offset printing.

A site visit and environmental survey were performed on February 17, 1982. Personal and area air samples for solvent vapors were collected on charcoal tubes at a flow rate of 200 cubic centimeters per minute (cc/min). The results of the air sampling are summarized in Table I. No solvent exposure was detected during the plate-making process. During the printing process, the following solvent exposures were measured: isopropanol, 15.7 milligrams per cubic meter (mg/M^3); diacetone alcohol, 1.9 mg/M^3; xylene, 8.2 mg/M^3; butyl cellosolve, 10.4 mg/M^3; and total naphtha, 45.3 mg/M^3. The NIOSH recommended levels for these solvents exposures are: isopropanol, 980 mg/M^3; diacetone alcohol, 240 mg/M^3; xylene, 435 mg/M^3; butyl cellosolve, 240 mg/M^3; and total naphtha, 400 mg/M^3.

In this exposure situation, a mixture of solvents are contained in the printing fluids. Therefore, the threshold limit value (TLV) can be calculated according to the formula $\frac{C_1}{T_1} + \frac{C_2}{T_2} + \frac{C_n}{T_n}$ where C is solvent concentration measured and T is the accepted TLV for each component. If this calculation is performed using the data gathered during the survey, the employee in question was exposed to 24.3% of the TLV for the mixture.

On the basis of the data gathered during the survey of February 17, 1982, NIOSH concludes that no health hazards due to solvent exposures existed at the time of the survey.

KEYWORDS: SIC 2740 (Miscellaneous Publishing), offset printing, solvents.

II. AUTHORSHIP AND ACKNOWLEDGEMENTS

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III. DISTRIBUTION AND AVAILABILITY OF REPORT

Copies of this report are currently available upon request from NIOSH, Division of Standards Development and Technology Transfer, 4676 Columbia Parkway, Cincinnati, Ohio 45226. After 90 days, the report will be available through the National Technical Information Service (NTIS), 5285 Port Royal, Springfield, Virginia 22161. Information regarding its availability through NTIS can be obtained from NIOSH Publications Office at the Cincinnati address. Copies of this report have been sent to:

1. Japan Economic Institute of America, Washington, D.C.
2. NIOSH, Region III
3. OSHA, Region III

For the purpose of informing affected employees, copies of this report shall be posted by the employer in a prominent place accessible to the employees for a period of 30 calendar days.

TABLE I

SOLVENT CONCENTRATIONS IN mg/M^3

JAPAN ECONOMIC INSTITUTE OF AMERICA
WASHINGTON, D.C.
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FEBRUARY 18, 1982

Sample Description	Sampling Duration	Isopropanol	Diacetone Alcohol	Xylene	Butyl Cellosolve	Total Naphtha	Percent of TLV
Personal/Plate-making	39 min	ND	ND	ND	ND	ND	
Personal/Printing	253 min	15.7 (1.6%)	1.9 (0.8%)	8.2 (1.9%)	10.4 (8.7%)	45.3 (11.3%)	24.3%
Area/Collating Desk	46 min	5.1 (0.5%)	ND	4.6 (1.1%)	6.6 (5.5%)	24.0 (6.0%)	13.1%
Evaluation Criteria:							
NIOSH Recommended Level		980	---	435	---	350	100%
OSHA Standard		980	240	435	240	400	
ACGIH Recommended Level		980	240	435	120	---	