

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. 78-23-530

THE NEW YORK TIMES CO. INC.
CARLSTADT, NEW JERSEY

SEPTEMBER 1978

I. TOXICITY DETERMINATION

A Health Hazard Evaluation was conducted by the National Institute for Occupational Safety and Health (NIOSH) at the New York Times Co. printing plant in Carlstadt, New Jersey on October 20, 1977 and October 31, 1977, regarding worker exposures to organic solvents, methodology used in the evaluation include 1) environmental sampling, 2) laboratory determinations 3) literature review of various chemical combinations and their physiological effects and 4) inspection of the workplace and personal observations..

Results of the hazard evaluation indicate that workers while cleaning presses were not exposed to excessive concentrations of the various solvents, for which recommended exposure criteria existed.

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:

- a. The New York Times Co., Inc., New York City, New York
- b. New York Pressmen's Union # 2, New York
- c. U.S. Department of Labor, Region II
- d. NIOSH - Region II

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 in the place of employment might have potentially toxic effects as it is used or may be found.

NIOSH received such a request from the New York Times regarding exposure of workers to organic solvents at its printing plant in Carlstadt, New Jersey.

IV. HEALTH HAZARD EVALUATION

A. Description of Process

The Times' Carlstadt facility had been in operation approximately 18 months. Its primary use is to print and assemble non-news sections of the daily and Sunday editions of the newspaper - real estate, book review, arts and leisure, etc. The news sections of the paper are printed at the New York City facility, which was not involved with this hazard evaluation.

The Carlstadt operations are highly computerized. Most of the facility is occupied by the storage area and newspaper folding and assemblage operations. The hazard evaluation was concerned with the reel and press "rooms" - a space 234 feet long, 42 feet wide and 46 feet high. The ground floor contains 18 reel machines which feed the blank newspaper to 18 high speed presses on the second floor, which is separated from the rest of the plant by transparent noise reduction panels. During the October 29th visit, three general air samples were taken, primarily for identification purposes. After interviews with workers and management, a general consensus was reached that, while low-level exposure to organic solvents occurred throughout the work-week, the most serious, prolonged exposures occur during weekly cleaning operations on Monday.

Therefore, the hazard evaluation was continued on Monday, October 31, after safety data sheets were studied and attempts were made to identify all possible organic solvents.

Upon arrival at the plant on the morning of October 31, it was apparent, by the temperature, that an unusual amount of ventilation had been supplied to the press area. It was agreed to by management and employees, that while cleanup operations would be performed, no air-sampling would be started until ventilation approached "normal" conditions.

The cleanup operations, which require approximately 6-8 hours, consisted of removing various detachable parts of the presses (pans, etc.) and washing ink accumulations with solvent soaked cloths. This is done in the aisles of the press room. A worker enters into the

confined space inside the press to scrub down the interior with solvent and to remove ink accumulations.

B. Sampling and Evaluating

The sampling procedure consists of drawing air, at metered rates, through glass tubes containing charcoal granules. Organic solvent vapors in the air enter into the tubes and are adsorbed on the charcoal particles to be desorbed and analyzed in the laboratory by gas-chromatography. With the knowledge of the amounts of solvent analyzed, and the quantities of air sampled, concentrations can be calculated.

Air Samples were collected in the breathing zones of employees as they performed cleanup operations. Charcoal tubes, contained in holders, were attached to the employee's collars. These tubes were connected by flexible tubing to calibrated air sampling pumps attached to the employee's belts. General air samples also were collected at several locations. An Industrial Hygienist from the Times insurance company collected duplicate samples using similar equipment.

Air Samples and bulk samples of the solvents used - "Press Kleen " "Navatone " and "Varn " were submitted to NIOSH's Measurements Support Branch Laboratory. Similar analyses were performed on the samples collected on October 20, 1977, but only the analysis of the samples collected on Monday, October 31, 1977 will be discussed here.

The bulk liquids were analyzed first by gas chromatography and gas chromatography/mass spectrography. "Press Kleen" and "Varn " bulks displayed similar peak patterns, indicating similar components. Major peaks indicated aliphatic hydrocarbons in the carbon 9 to carbon 10 chain range, and C_9H_{12} aromatics - molecular weight 120. These aromatics include n-propyl benzene, trimethyl benzene isomers, and methyl ethyl benzene isomers. Organic compounds found in the "Navatone" bulk consisted of C_9H_{12} aromatics also, plus higher boiling aromatics, molecular weight 134 - $C_{10}H_{14}$ - including secbutyl benzene, dimethyl ethyl benzene isomers, etc; molecular weight 132- $C_{10}H_{12}$ compounds such as allyl toluene or ethyl styrene and some molecular weight 148- $C_{11}H_{16}$ compounds such as phenyl methyl butane isomers. Napthalene was also identified in the "Navatone" bulk. The results of analyses mainly conforms with the information supplied by the solvent's distributors.

All charcoal tube samplers were desorbed with carbon disulfide and then analyzed by gas chromatography using a 20 ft., SS 10% SP1000 column. Since high concentrations were found on the front sections of the charcoal samples, all backup sections were also analyzed separately. Values reported for samples P-1 and P-3 must be taken

as the minimum amounts that could have been present since breakthrough may have occurred for these samples. No attempt was made to quantitate results in terms of "Press Klean," "Varn or the "Navatone" bulks since their chromatograms overlapped and it would be impossible to indicate which component came from which bulk. Results are given in the table attached.

Of the specific chemicals mentioned in the analyses only tri-methyl benzene and naphthalene have had occupational standards set by the Occupational Safety and Health Administration - trimethyl benzene: 120 milligram per cubic meter of air (mg/m^3) and naphthalene: 50 mg/m^3 . None of the compounds or combination of chemicals have been the subject of criteria documentation by NIOSH. Naphthalene is listed as a suspected carcinogen in NIOSH's 2nd Edition of Suspected Carcinogens (1976) (Naphthalene is commonly found in moth balls.)

C. RECOMMENDATIONS

Although no established standards for exposure to airborne contaminants were indicated to be exceeded during the health hazard evaluation, it is, perhaps, impractical to expect a standard for any particular group of chemicals. (NIOSH is developing a criteria document on the printing industry for completion in 1979-1980). The solvents used are best described as a group of chemicals refined from petroleum at a common boiling range. Comparison with Stoddard solvent, (a group of chemicals with a lower boiling range and an TLV of $575 \text{ mg}/\text{m}^3$) suggests a possible airborne standard in the range of $500\text{-}1000 \text{ mg}/\text{m}^3$; a limit which was approached in this health hazard evaluation.

Therefore, based on good work practices, the following recommendations are made:

1. Workers were observed using disposable particulate filters during the hazard evaluation, even though approved organic vapor respirators were available. Only approved organic vapor respirators should be used during clean-up operations or during other times when solvents are used. Portable exhaust ventilation should be applied at cleaning presses to reduce vapor concentrations.
2. Heaters have been installed in the press room ventilation system, making the use of the ventilation system more acceptable during cold weather. General ventilation always should be maximized during clean-up operations.
3. The supplier of "Navatone" should be informed that the product contains naphthalene - a suspected carcinogen. Elimination of naphthalene or substitution of the solvent should be considered.

4. Establishment of a "buddy-system" should be made to insure prompt removal from exposure should a worker become incapacitated while cleaning inside the presses.

V. AUTHORSHIP AND ACKNOWLEDGEMENTS

Report Prepared By:

Nicholas L. Fannick
Industrial Hygienist

Originating Office:

Jerome P. Flesch, Chief
Hazard Evaluation and
Technical Assistance Branch

We wish to thank the employees and management of the New York Times Co. Inc. for their co-operation during this health hazard evaluation.

Table

New York Times - Carlstadt

<u>location/job description</u>	<u>(Date)</u>	<u>Sample #</u>	<u>aliphatics</u> <u>(mg/M³)</u>	<u>aromatics</u> <u>(mg/M³)</u>	<u>total</u> <u>(mg/M³)</u>	<u>Naphthalene</u>
machine shop, general air southwest corners	(10/21)	A-1	4	16	20	*
# 13 Press, general air	(10/21)	A-2	61.4	79.4	140.8	*
# 13 reel, general air	(10/21)	A-3	*	*	*	*
# 3 press, general air	(11/1)	A-4	151	217	368	0.1
# 9 press, general air	(11/1)	A-5	73	107	180	.04
#13 press, general air	(11/1)	A-6	107	158	265	.05
Cleaning presses	(11/1)	P-1	181	346	527	12
Cleaning pans	(11/1)	P-2	99	152	251	0.5
" "	"	P-3	815	1205	2020	1.2
" "	"	P-4	220	313	533	1.7
" "	"	P-6	145	198	343	0.5

* None detected