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. 79-64-593

PENNSYLVANIA SOCIAL SERVICES UNION
LOCAL 668, SEIU, AFL-CIO
PHILADELPHIA, PENNSYLVANIA

MAY, 1979

I. TOXICITY DETERMINATION

NIOSH conducted a health hazard evaluation at the Pennsylvania Social Services Union, Philadelphia, Pennsylvania on April 3, 1979. The purpose of the evaluation was whether exposures to xylene vapor and other solvents were present in such quantities which would cause headaches, dizziness, nausea, vomiting and eye irritation. The source of these contaminants is Rich-Art Graphics, a silk screen printer located adjacent to the Pennsylvania Social Services Union.

Since this request stated that the contaminants were not generated on the premises but were seeping in from an adjacent building, NIOSH requested that the Philadelphia Air Management Service, which has authority to investigate such matters, participate in this evaluation.

During the evaluation of April 3, 1979, no odors were detected sensually or by colorimetric detector tubes by the investigators or personnel from Pennsylvania Social Services Union.

II. DISTRIBUTION AND AVAILABILITY OF DETERMINATION REPORT

Copies of this report are available from NIOSH, Division of Technical Services, Information Resources 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. Information regarding its availability can be obtained from the NIOSH Publications Office at the Cincinnati address. Copies have been sent to:

a) Pennsylvania Social Services Union, Local 668, SEIU, AFL-CIO
b) Rich-Art Graphics
c) Philadelphia Air Management Services
d) NIOSH, Region III
e) OSHA, Region III

For the purpose of informing the approximately 10 "affected employees," the employer shall promptly "post" for a period of 30 calendar days the Determination Report in a prominent place(s) near where exposed employees work.

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 received such a request from an authorized representative of employees of Pennsylvania Social Services Union, Local 668, SEIU, AFL-CIO alleging at various times a heavy odor from Rich-Art Graphics causes headaches, dizziness, nausea, vomiting, and eye irritation.

IV. HEALTH HAZARD EVALUATION

A. Plant Process - Condition of Use

This location is the office of the Pennsylvania Social Services Union. The first floor consists of a reception room, five business agents offices and a reproduction room. The second floor is a union meeting hall. This location has been occupied by the present tenant since October 1978. Since their occupancy extensive remodeling has been done.

Shortly after moving in they noticed solvent odors eminating from the reproduction room. This room has a 10 by 12 foot door which is in the process of being replaced and is covered with plastic. This was pointed out to the Industrial Hygienist as the area where the contaminant enters the premises.

B. Evaluation Design

On April 3, 1979, Walter J. Chrostek, NIOSH Industrial Hygienist, along with Robert Hatcher, Philadelphia Air Management (PAM), Air Pollution Inspector visited the premises. It was explained that NIOSH had no authority to enter the Rich-Art Graphics building as the health hazard evaluation requestors were not their employees, but could enter Rich-Art Graphics with the permission of the owner. Robert Hatcher said PAM had the authority to investigate the source of the complaint. Following his visit to the Rich-Art Graphics, permission to enter the premises was granted.

Rich-Art Graphics is a twin two-story property. The first floor consists of an office, a lay-out room and a spray painting-silk screen washing area. Silk screen printing and drying is done on the second story. The coatings used are lacquers, enamels and vinyl resin type. The solvents used are lacquer thinner, silk screen cleaner, vinyl cleaner and xylol. Petroleum aliphatic solvent is used for screen spraying.

There are three silk screen tables. Local exhaust ventilation at floor level has been recently installed in the room. However, it does not appear to be effective in removing the contaminants at the source. The contaminant could be more effectively removed if the exhaust ventilation was located at the source of generation.

C. Evaluation Methods

On April 3, 1979, vapor analyzer tubes were used at the Pennsylvania Social Services Union. The following is a list of contaminants for which tests were made and the lower limit of detection:

Contaminant	Limit of Detection*
Benzene	0.5
Acetone	100
Methyl Ethyl Ketone	200
Xylene	20
Toluene	20

*PPM - parts of contaminant per million parts of air sampled.

D. Evaluation Criteria

Environmental

Contaminants which may have been in the work atmosphere were sampled for, and the evaluation criteria for them will be given. Airborne exposure limits for the protection of the health or workers have been recommended or promulgated by several sources. These limits are established at levels designed to protect workers occupationally exposed to a substance on an 8-hour day, 40-hour per week basis over a normal working lifetime. For this investigation, the criteria used to assess the degree of health hazards to workers were selected from these sources:

1) NIOSH: Criteria for a Recommended Standard:

   a) Occupational Exposure to Benzene, Revised July 1977
   b) Occupational Exposure to Toluene, July 1973
   c) Occupational Exposure to Xylene, May 1975

2) Threshold Limit Values (TLV): Threshold Limit Values for Chemical Substances and Physicial Agents in the Workroom Environment, 1978, Recommended by the American Conference of Governmental Industrial Hygienists (ACGIH).

3) OSHA Standard: The air contaminant standards enforced by the U.S. Department of Labor - Occupational Safety and Health Administration - as found in the Federal Register - 29 CFR 1910.1000 (Table Z-3).

	Source/Concentration*		
Substance	NIOSH[2]	TLV[3]	OSHA[4]
Benzene	1	10**	10***
Acetone		1000	1000
Methyl Ethyl Ketone		200	200
Xylene	100	100	100
Toluene	100	100	200

*PPM - parts of contaminant per million parts of air sampled.

**Industrial substance suspect of carcinogenic properties.

***Proposed standard to be 1 PPM.

The following are Odor Threshold Value for these contaminants.

Substance	Odor Threshold (PPM)
Benzene	60
Acetone	320
Methyl Ethyl Ketone	25
Xylene	40
Toluene	20

E. Results and Discussion

During the evaluation of April 3, 1979, all detector tube readings were below the lower limit of detection for the specific contaminant. Olfactory detection was also negative by all personnel at the site, including the requestor.

The weather conditions during the evaluation were a dark, dreary day with rain. This type of weather is conducive for evaluation of the worse conditions, as all contaminants are kept close to the ground and not dissipated into the atmosphere.

The requestor stated that prior to filing the health hazard evaluation request, using xylene detector tubes she was able to detect 30 parts of the contaminant per million parts of air. She also said that the odor was also prevalent during certain evenings when meetings are held.

This investigation did not detect the presence of any solvent vapors at the Pennsylvania Social Services Union facility. The Philadelphia Air Management inspector will request their engineers to investigate conditions at the adjacent Rich-Art Graphics facility.

V. RECOMMENDATIONS

1. If odors are detected, the condition should be reported to Philadelphia Air Management Services at (215) MU 6-7840.

VI. REFERENCES

1. American Conference of Governmental Industrial Hygienists, "Industrial Ventilation, A Manual of Recommended Practice," 14th Edition, 1976.

2. NIOSH, Publications Office, DTS, 4676 Columbia Parkway, Cincinnati, Ohio 45226.

3. American Conference of Governmental Industrial Hygienists, "Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment", 1973.

4. U.S. Department of Labor, Occupational Safety and Health Administration, Federal Register, Vol. 39, No. 125, Part II, June 12, 1974, Subpart Z, Section 1910.1000, Table Z-3.

5. CRC Press, Cleveland, Ohio, Odour Pollution of Air, W. Summer, Pages 22-25, 1971.

VII. AUTHORSHIP AND ACKNOWLEDGEMENTS

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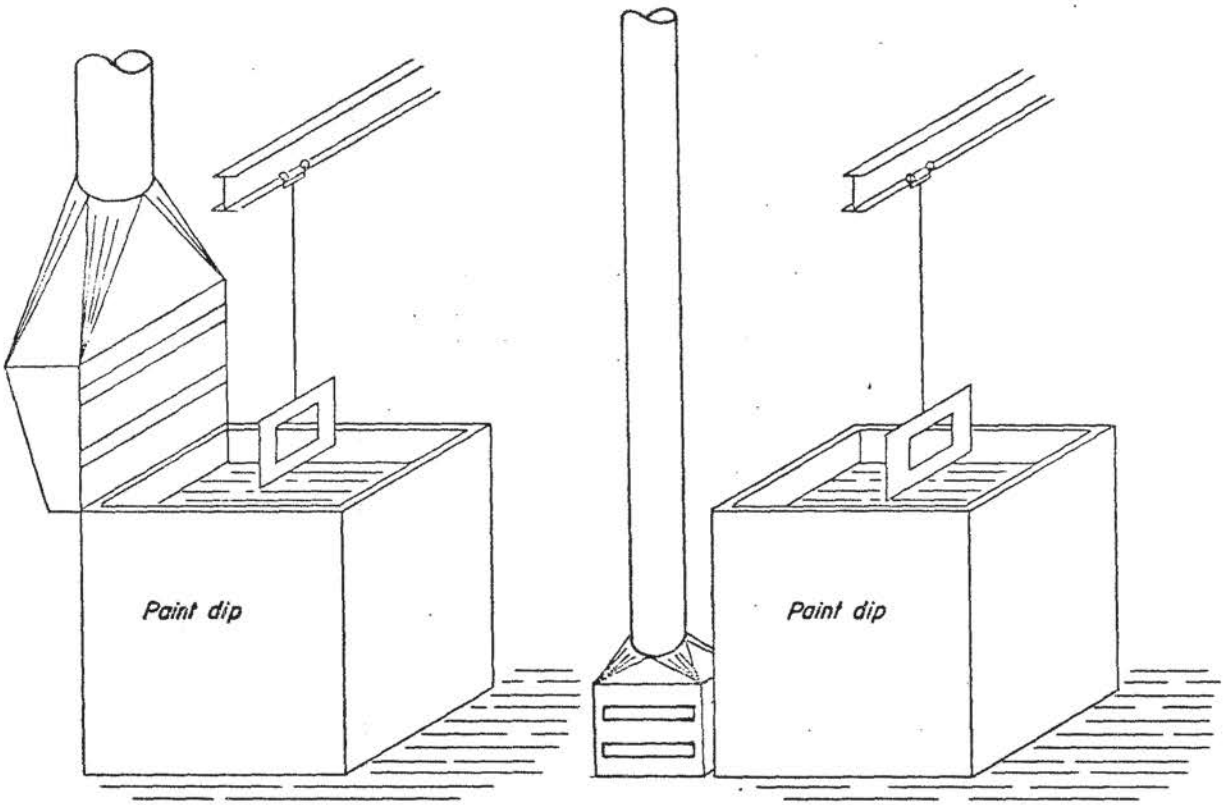
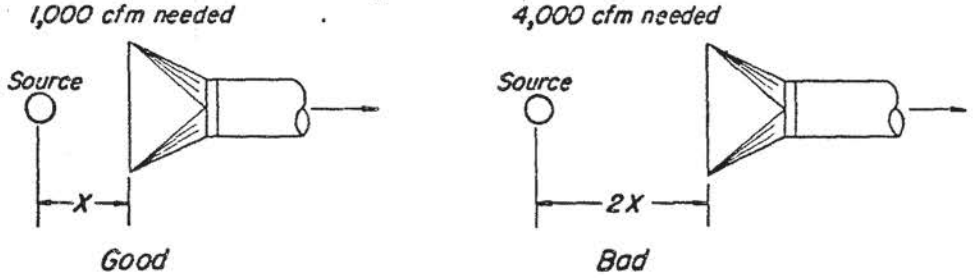


LOCATION

Solvent vapors in health hazard concentrations are not appreciably heavier than air Exhaust from the floor usually gives fire protection only.

Example:	*Density of air*	*1.0*
	Density of 100% amyl acetate vapor	*4.49*
	Density lowest explosive mixture	*1.038*
	Density T.L.V. mixture	*1.0003*



LOCATION

Place hood as close to the source of contaminant as possible. The required volume varies with the square of the distance from the source.

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS

PRINCIPLES OF EXHAUST HOODS

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