

U.S. DEPARTMENT OF HEALTH EDUCATION, AND WELFARE
Public Health Service
Center for Disease Control
National Institute for Occupational Safety and Health
Cincinnati, Ohio 45226

HEALTH HAZARD EVALUATION DETERMINATION REPORT
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SEISER & WILPON
NEW YORK, NEW YORK

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I. SUMMARY

On October 15, 1979 the National Institute for Occupational Safety and Health (NIOSH) received a request from the firm of Seiser & Wilpon to determine if the Savin duplicating machine was generating harmful amounts of air contaminants. Personnel who worked in the office containing the duplicating machine had complained of occasional eye, nose and throat irritation during days when the machine was in operation. To evaluate the emissions given off by the duplicating machine, samples for organic solvents were collected on charcoal tubes and determinations for ozone were made using detector tubes. The only organic solvent found by analysis of the charcoal tubes was toluene. Only traces of ozone were found using the detector tubes.

Even though the levels of toluene and ozone were found to be less than the environmental criteria, it is suggested that ventilation in the office area be improved. In a small office such as the one studied, use of the duplicating machine and the quantity of emissions generated especially ozone, can vary greatly.

II. INTRODUCTION*

On October 24, 1979, NIOSH conducted a survey at Seiser & Wilpon, 314 E. 53rd Street, New York City, to determine concentrations of emissions generated by a duplicating machine. Personnel had complained of eye, nose and throat irritation concurrent with operation of the machine. Even though levels of toluene and ozone were found to be less than the accepted standard, recommendations were made to increase ventilation, since the complaints are compatible with those of exposure to ozone, and the amount of ozone generated can vary with use of the machine.

*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.

III. BACKGROUND

Seiser & Wilpon is a law firm, occupying a brownstone building at 314 East 53rd Street, New York City. The front room, 12'x10'x12' high is the secretary/receptionist's office. The only machinery used are an electric typewriter and a Savin duplicating machine. Natural window ventilation usually is not used because of the large amount of local traffic. The secretary, and occasionally one of the lawyers had complained of eye, nose and throat irritation, usually associated with the operation of the duplication machine. The physiologic conditions are compatible with those which are recognized to follow exposure to ozone, a substance which can be generated by the high intensity light source used in duplicating machines, and the symptoms were compatible with those which follow exposure to solvent vapors of the type commonly used in duplicating machines.

IV. SAMPLING AND ANALYTICAL METHODS

Charcoal tubes were used to collect air samples to determine airborne concentrations of organic solvent vapors. Air pumps (operating at approximately 200 cubic centimeter of air per minute) were used to draw air through glass tubes containing activated charcoal granules. Organic solvent vapors are adsorbed onto the charcoal, which are then desorbed in carbon disulfide and further analyzed using NIOSH's standard gas chromatograph method. Detector tubes were used to analyze for ozone. As air is drawn through this type of tube, ozone will react with a chemical mixed with charcoal granules, producing a color change. The length of color change within the tube is proportional to the amount of ozone in the air.

V. RESULTS

The amount of actual duplicating to be done at the time of the survey was limited. However, to simulate reasonably busy conditions the machine was operated constantly for a one half-hour period, intermittently for the next two hours and then constantly for another half-hour period. Even though the odor of ozone was present during the periods of constant operation, only trace concentrations of ozone could be detected by the detector tube method, even when the tubes were placed directly in the machine's "exhaust."

The only organic solvent detected by gas-chromatographic analysis was toluene, at concentrations of 0.24 and 0.16 parts per million. Evaluation criteria used for this report are as follows:

<u>Compound</u>	<u>OSHA Standard</u>	<u>NIOSH Recommended Standard</u>
Ozone	0.1 ppm*	0.1 ppm
Toluene	200 ppm	100 ppm

*ppm = parts of contaminant per million parts of air by volume (for an eight hour daily average exposure)

Even though the levels of contaminants were less than the above evaluation criteria, recommendations are made, based on the following logic:

- 1) The physiological complaints are compatible with exposure to low levels of toluene and especially to ozone.
- 2) The complaints are associated with use of the duplicating machine.
- 3) Both ozone and toluene were generated by even limited use of the duplicating machine.

VI. RECOMMENDATIONS

1. The office air conditioner be moved to the window adjacent to the exit end of the duplicator where the duplicates emerge. The air conditioner should be used in the "exhaust" mode whenever the duplicator is operated.
2. The duplicator be kept in good repair and only company recommended solvents be used.
3. As much as possible, duplicating be done at the end of the work-day.

VII. DISTRIBUTION - AVAILABILITY

Copies of this report are currently available upon request 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, 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) Seiser & Wilpon, New York
- 2) U.S. Dept of Labor, OSHA, Region II
- 3) U.S. Dept HEW, NIOSH, Region II
- 4) NY State Office of Public Health

VIII. AUTHORSHIP - ACKNOWLEDGEMENTS

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