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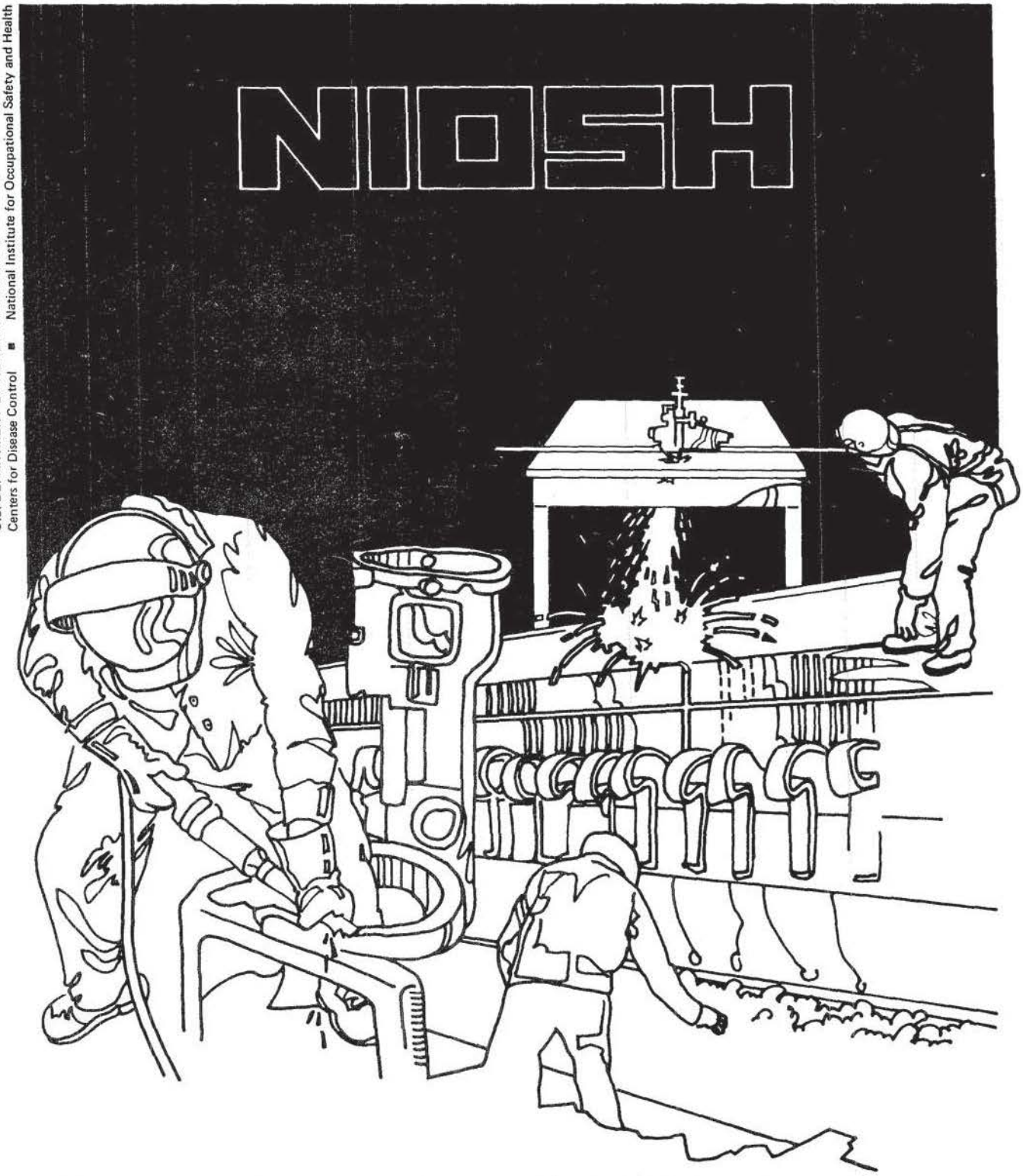

Health Hazard Evaluation Report

HETA 81-099-908
AOPR, INC.
CINCINNATI, OHIO

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.

HETA 81-099-908
July 1981
AOPR, Inc.
Cincinnati, Ohio

NIOSH Investigator:
Steven A. Lee, IH

I. SUMMARY

In November 1980, the National Institute for Occupational Safety and Health (NIOSH) received a request from the owners of AOPR, Inc., Cincinnati, Ohio for an evaluation of their office building in Cincinnati.

Environmental sampling and interviews were conducted by NIOSH on November 28, 1980 and February 18, 1981. The two people who owned and worked in the building reported a variety of symptoms temporally related to occupancy of the building. Symptoms included headaches, dizziness, nausea, blurred vision, confusion, and respiratory irritation. Both reported similar symptoms, and both stated that symptoms were worse when the furnace was running and/or when the building had been "closed up for a day or two." They said that symptoms dissipated within a few hours after opening the doors and windows. Since the building was only several months old, the owners speculated that some of the new construction materials were releasing toxic vapors into the office. Neither reported a history of allergy, and neither smoked.

Direct-reading colorimetric detector tubes were used to measure formaldehyde, ozone, oxides of nitrogen, sulfur dioxide, total hydrocarbons, ammonia, triethylamine, aniline, phenol, carbon monoxide, and carbon dioxide. All levels were below the limit of detection.

Bulk samples of carpet, padding, wallpaper, pastes, adhesives, and duct insulation were collected. The samples were heated to 60°C while using charcoal tubes to trap volatile organics. The charcoal was then desorbed with carbon disulfide and analyzed by gas chromatography. No contaminants were detected. Wallpaper and carpet samples were heated to 49°C and analyzed for latent formaldehyde using the chromatropic acid-colorimetric method. No formaldehyde was detected. Water extracts and heated headspace samples from carpet and duct insulation were analyzed for amines using gas chromatography. No amines were detected.

One bulk air charcoal tube sample was collected from the center of the office, one was collected inside the heating duct (with furnace running), and one was collected inside a roll of carpet. All were drawn at 1.5 liters per minute for three hours and were later analyzed by gas chromatography/mass spectrophotometry (GC/MS). Low concentrations of C_4-C_7 alkanes, toluene, xylene, carbon tetrachloride, benzene, a $C_{10}H_{16}$ terpene, and a few molecular weight 120 aromatics were identified in all three areas at levels too low to be quantitated. Four silica gel tubes were also collected (in the same areas as the charcoal tubes) at 200 cc/min. for three hours. These samples were analyzed for aliphatic amines according to NIOSH Method P & CAM 221, but none were detected. Three air samples for formaldehyde were collected (also in the same areas as mentioned above) on activated charcoal and analyzed by P & CAM 318. No formaldehyde was detected.

No health hazards due to air contaminants were found by NIOSH at AOPR, Inc. The cause of the symptoms remains unknown, but they were not likely due to chemicals generated by materials then in the office.

KEYWORDS: SIC 9199, Office building, office workers, office air quality, carbon monoxide, carbon dioxide, ozone, formaldehyde, oxides of nitrogen, alkanes, amines.

II. DISCUSSION AND RECOMMENDATIONS

Any of the symptoms could be the result of exposures to irritant or otherwise toxic substances. However, it does not seem likely that such illnesses could be due to contaminants present in concentrations below the analytical sensitivity of the various methods employed by NIOSH during this survey. The array of organic compounds qualitated by GC/MS probably accounts for the "new smell" associated with this recently constructed building, but it cannot reasonably account for the adverse health effects in terms of any currently available occupational health criteria.

On the basis of the employees' observation that opening doors and windows alleviates symptoms, NIOSH recommends that large quantities of outside fresh air be frequently supplied to the AOPR office.

III. AUTHORSHIP AND ACKNOWLEDGEMENTS

Evaluation Conducted and Report Prepared By:	Steven A. Lee Industrial Hygienist Industrial Hygiene Section
Field Assistance:	Michael J. Kern Industrial Hygiene Student Industrial Hygiene Section
Originating Office:	Hazard Evaluations and Technical Assistance Branch Division of Surveillance, Hazard Evaluations, and Field Studies Cincinnati, Ohio
Report Typed By:	Cheryl A. Burt Clerk-Typist Industrial Hygiene Section

IV. DISTRIBUTION AND AVAILABILITY OF REPORT

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.

Copies of this report have been sent to:

1. AOPR, Inc.
2. OSHA, Region V
3. NIOSH, Region V

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