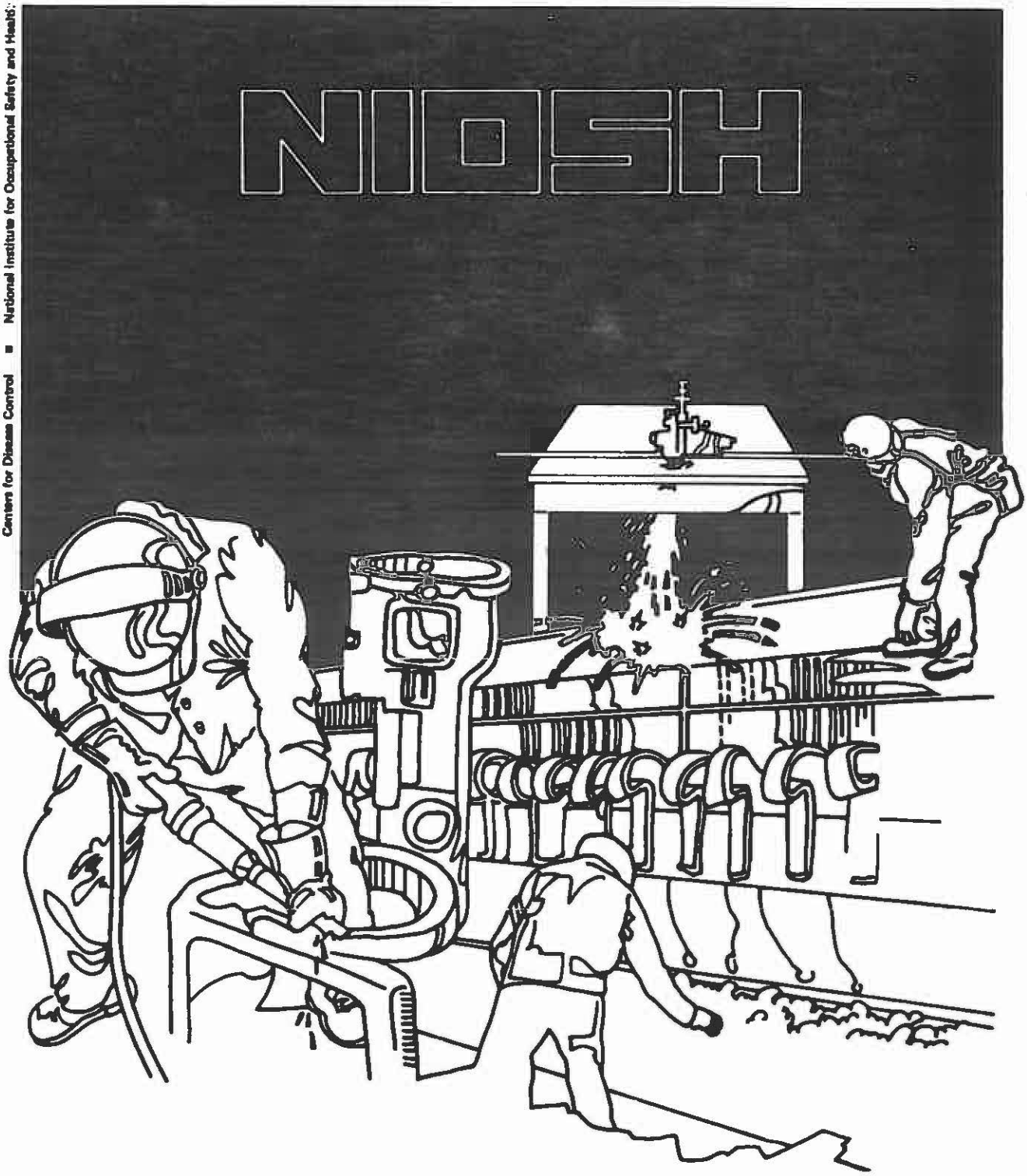
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES ■ Public Health Service
Centers for Disease Control ■ National Institute for Occupational Safety and Health

NIOSH



Health Hazard Evaluation Report

HETA 81-451-1137
FORDHAM UNIVERSITY
NEW YORK, NEW YORK

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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New York, New York

NIOSH INVESTIGATORS:
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I. SUMMARY

In September 1981, the National Institute for Occupational Safety and Health (NIOSH) received a request for a health hazard evaluation from the administration of Fordham University at Lincoln Center, New York. The request was prompted by concern about an apparent increased incidence of cancer among employees working in offices on the eleventh (top) floor of the eight year old building. The request included a listing of 18 persons working in the "immediate area in question", several of whom had had "major surgery" within the past year.

On October 7, 1981, NIOSH visited the site to tour the area in question and examine the medical information available on the affected employees. The employees on the tenth and eleventh floor do research, administrative, and clerical work. No laboratories are located on the floors and industrial activities are not performed there.

Five cancers occurred in four persons among 84 staff working on the tenth and eleventh floors, including two carcinomas of the breast, a carcinoma of the face, lymphoma, and an unidentified carcinoma involving the abdomen. Other identified persons had no medical problems or unrelated non-malignant disorders.

Even though the medical problems appear to be unrelated, the staff expressed concern that they may be caused or exacerbated by the office environment. Thus NIOSH conducted an environmental investigation which included sampling for carbon dioxide, carbon monoxide, and formaldehyde using direct reading detector tubes. Charcoal tubes and silica gel tubes were used to sample for organic vapors. Ionizing radiation was measured using a direct reading meter. Carbon dioxide and carbon monoxide levels were less than one-tenth of the NIOSH recommended criteria. No formaldehyde was detected. No significant organic vapors were detected. Ionizing radiation was measured at a rate of 0.03 milliroentgen per hour - a normal background level.

NIOSH concludes that no health hazard exists on the eleventh floor of the Fordham University building. There does not appear to be an excess incidence of malignant disorders among the workers. Environmental sampling for organic vapors and ionizing radiation indicates that there is no excessive exposure to these agents.

Keywords: SIC 8221 (Universities), formaldehyde, carbon monoxide, carbon dioxide, hydrocarbons, ionizing radiation, indoor air pollution.

II. INTRODUCTION

In September 1981, the National Institute for Occupational Safety and Health (NIOSH) received a request for a health hazard evaluation from the administration of Fordham University at Lincoln Center, New York. The request was prompted by concern among the employees working on the east end of the eleventh floor (top) of the building that there was an increased incidence of cancers among the staff.

On October 7, 1981, NIOSH visited the site and reviewed the medical information available on the affected employees. On December 17, 1981, NIOSH returned to conduct environmental sampling for organic vapors and ionizing radiation.

II. BACKGROUND

The Fordham University building at Lincoln Center, 60th Street and Columbus Avenue, New York, was occupied in mid-1973. Prior to that date, the staff was housed at Duane and Broadway in a building which has since been demolished. The eleven story building has adminstrative and research offices, as well as classrooms. The east end of the eleventh floor houses the English Department in two suites. The south suite consists of four large rooms, about 20' x 20' x 12' high. The north suite consists of a main room, a storage room and six small offices. No duplicating machines or word processors are used in the offices. Typewriters are the only office machines. The rest of the eleventh floor and the tenth floor consist of similar offices associated with other departments.

The central ventilation system which supplies air to the eleventh floor services other offices on lower floors in the building. The chemistry laboratories in the building are supplied by separate ventilation system.

The staff on the tenth and eleventh floors of the building consists of professors, research associates, and secretaries. Beginning in late-1980, the staff began to notice that several persons had had "major surgery" within a short period of time and that four persons had been diagnosed as having malignant disorders. Between August 1980 and January 1981, six of approximately 15 people on the east end of the eleventh floor developed medical problems or had surgery - an ovarian cyst, "cervical problems", lymphoma, hysterectomy, and two mastectomies. The staff became concerned that these health problems were possibly due to an environmental agent within the building.

In mid-1981, they requested assistance from the New York State Department of Health. A representative of the Department reviewed the medical diagnoses and found a variety of apparently unrelated medical problems. He concluded "that there is no apparent excess of malignant disorders among the...staff on the eleventh floor." Furthermore, the other individuals "essentially present with a variety of non-malignant disorders and little can be said concerning their diagnoses."

In late-1981 some of the ill persons developed medical complications in the treatment of their disorders. These complications further increased concern among the staff that the building environment may have been exacerbating the medical conditions. Thus the administration of Fordham University requested that NIOSH environmentally evaluate the building.

IV. EVALUATION DESIGN AND METHODS

The NIOSH medical officer reviewed the information available on the medical disorders experienced by the staff. The assessment made by the New York State Department of Health appears to be adequate; no further medical evaluation is indicated. The letter containing the findings of the New York State Department of Health is reproduced in the Appendix.

On December 17, 1981, NIOSH conducted sampling for possible environmental contaminants. Carbon dioxide, carbon monoxide, and formaldehyde were measured by direct reading detector tubes. Organic vapors and acidic gases were sampled using charcoal tubes and silica gel tubes as the collection media. These tubes can absorb a broad spectrum of contaminants from the air. Seven charcoal tube and five silica gel tube samples were collected in offices on the eleventh floor using sampling rates of approximately 0.2 and 2 liters of air per minute. The charcoal tubes were desorbed in carbon disulfide and the silica gel tubes were desorbed in ethanol. All tubes were analyzed by gas chromatography with a flame ionization detector in accordance with P&CAM #127.

Ionizing radiation was measured using a direct reading ionizing radiation meter.

V. EVALUATION CRITERIA

The environmental evaluation criteria for carbon dioxide, carbon monoxide and formaldehyde are shown below. The criteria include the NIOSH recommended standards and the Federal occupational health standards as promulgated by the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor (29 CFR 1910.1000). The NIOSH recommended standards are based on a 10 hour work day, 40 hour work week. The OSHA standards are based on an 8 hour work day, 40 hour work week:

Substance	NIOSH Recommended Standard (ppm[a])	OSHA Federal Standard (ppm)
Carbon dioxide	10,000	5,000
Carbon monoxide	35	50
Formaldehyde	LFL[b]	3

(a) ppm = parts per million parts of air
(b) LFL = lowest feasible limit

VI. RESULTS AND DISCUSSION

Carbon dioxide concentrations of 300 to 500 ppm were measured throughout the offices. Carbon monoxide concentrations ranged from 2 to 5 ppm in the offices. Both of these substances were found in levels much below the NIOSH recommended standards and the OSHA standards. These levels are similar to those measured by NIOSH in other offices in the New York City area. No formaldehyde was detected with the direct reading detector tubes (limit of detection is 0.05 ppm).

No significant organic vapors were detected using the charcoal or silica gel tubes. Numerous small peaks could be seen on the charcoal tubes by gas chromatography. However, all were too small to be identified by mass spectrometry. No significant peaks were found on the silica gel tubes.

Ionizing radiation was measured at a rate of approximately 0.03 milliroentgen per hour. This amount of ionizing radiation is equivalent to normal background and is far below any environmental standards.

VII. CONCLUSION

NIOSH concludes that no health hazard exists in the offices on the eleventh floor of the Fordham University building at Lincoln Center. There does not appear to be an increased incidence of malignant disorders among the staff on the tenth and eleventh floors. Environmental sampling on the eleventh floor indicates that there is no excessive exposure to carbon dioxide, carbon monoxide, formaldehyde, organic vapors, or ionizing radiation.

VIII. AUTHORSHIP AND ACKNOWLEDGEMENT

Evaluation Conducted and Report Prepared by:

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Division of Surveillance, Hazard Evaluations and Field Studies

IX. DISTRIBUTION AND AVAILABILITY OF REPORT

For the purpose of informing the "affected employees", the employer should post this report for at least 30 days in a prominent place(s) near where the employees work.

Copies of this report will be available from NIOSH, Division of Standards Development and Technology Transfer, Information Resources and Dissemination Section, 4676 Columbia Parkway, Cincinnati, Ohio, 45226, for 90 days. Thereafter, copies will be available from the National Technical Information Service (NTIS), Port Royal Road, Springfield, Virginia, 22161. Information concerning its availability through NTIS can be obtained from the NIOSH publication office at the above Cincinnati address.

Copies of this report have been sent to:

Fordham University at Lincoln Center
OSHA, Region II
New York State Department of Health

APPENDIX

A letter from the New York State Department of Health to Fordham University dated May 1, 1981, with findings from their review of the medical diagnoses is reproduced on the following two pages:

STATE OF NEW YORK
DEPARTMENT OF HEALTH OFFICE OF PUBLIC HEALTH
TOWER BUILDING • THE GOVERNOR NELSON A. ROCKEFELLER EMPIRE STATE PLAZA • ALBANY, N.Y. 12237

DAVID AXELROD, M.D.
Commissioner
GLENN E. HAUGHIE, M.D.
Director of Public Health

DIVISION OF EPIDEMIOLOGY
PETER GREENWALD, M.D., DR. P.H.
Director

May 1, 1981

Rev. George J. McMahon, S.J.
Vice President for Administration
Fordham University at Lincoln Center
New York, New York 10023

Dear Father McMahon:

Thank you for your letter of April 16, 1981 concerning the possibility that there might be a high incidence of cancer among faculty members on the eleventh floor of your institution. A review of the line listing of 18 names provided by your office indicates that four individuals have been diagnosed with certain types of cancer. I am assuming that had some type of abdominal cancer since the site was not specified. I feel the following comments are pertinent:

1. Breast cancer is one of the most common malignant disorders in females residing in industrialized countries. The incidence of this disease increases with age, ranging from approximately 16 per 100,000 in the 30 through 34 age group to 150 per 100,000 in the 60 to 64 age group. Two of your employees, both in their fifties, have documented breast cancer. This is not at all surprising considering the rates quoted above and their age group. In my own experience I have seen many instances of three or four cases of breast cancer on a single street or localized section of a specific community. Accordingly, I do not feel that this observation in itself is indicative of any excess.

2. Many factors are thought to be of importance in the etiology of breast cancer. These include: radiation, pregnancy history - especially age at first pregnancy, and the ingestion of certain drugs. Occupational factors do not seem to play a major role in the etiology of this disorder.

3. Another individual on your list has a malignant lymphoma. This is a relatively rare tumor when contrasted to breast cancer and there is some suggestion that occupational factors, possibly exposure to solvents, might be of importance.

4. The other individuals on your list essentially present with a variety of non-malignant disorders and little can be said concerning their diagnoses.

On reviewing the data presented in your letter my basic feeling is that there is no apparent excess of malignant disorders among the members of your staff on the eleventh floor. The scientific literature contains no evidence suggesting an association between lymphomas and breast cancer and in all probability these events are fortuitous. I can appreciate the concern expressed by these individuals and would be more than willing to make myself available for further information should they wish to contact me. I hope I have been of some assistance to you in this matter.

Sincerely,

Nicholas J. Vianna, M.D., M.S.P.H.
Director, Bureau of Environmental
Epidemiology and Occupational Health