U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES ■ Public Health Service
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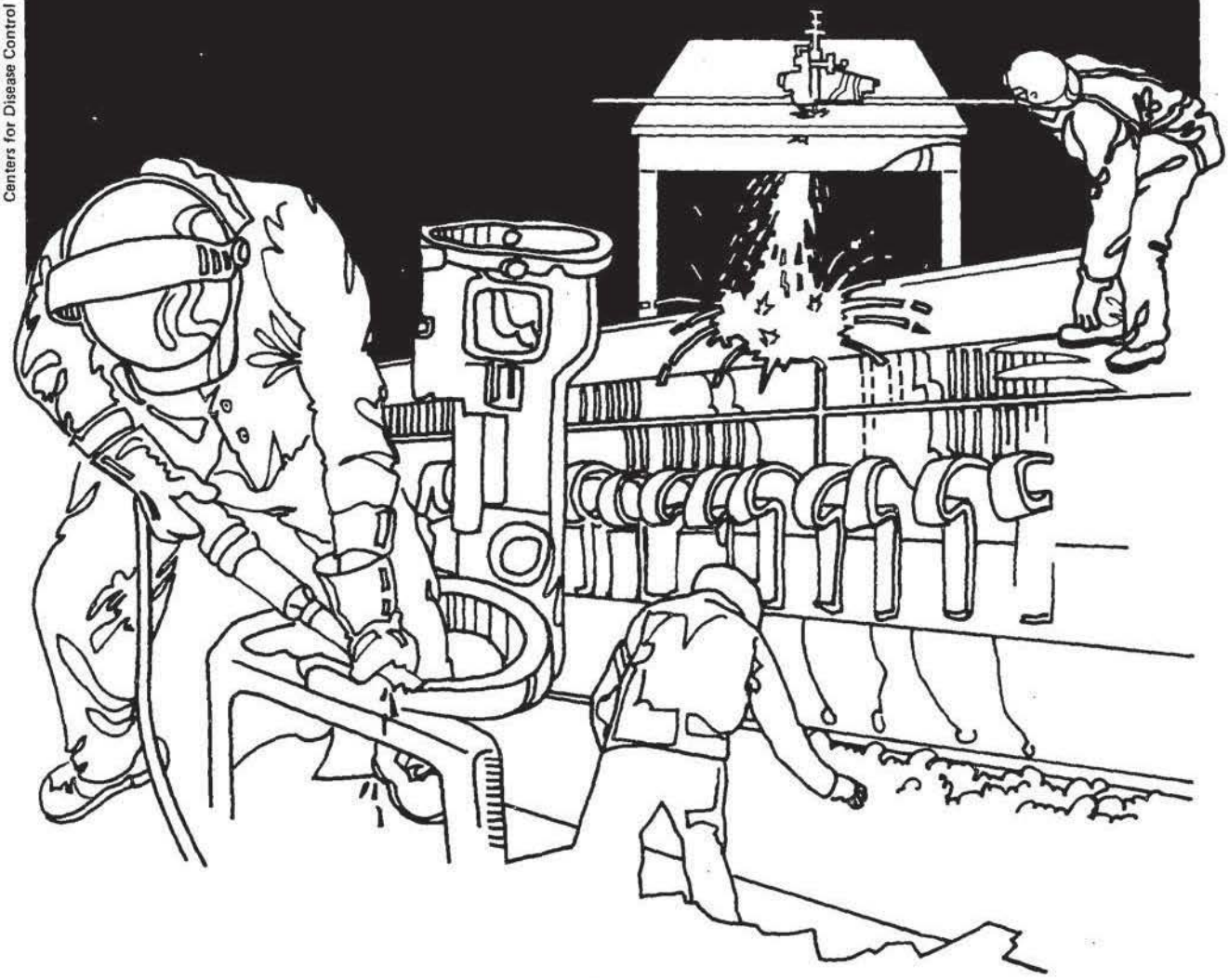
NIOSH



Health Hazard Evaluation Report

HETA 81-290-906
SOCIAL SECURITY OFFICE
NEWBURGH, 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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JUNE 1981
SOCIAL SECURITY OFFICE
NEWBURGH, N.Y.

NIOSH INVESTIGATOR:
NICHOLAS FANNICK, IH

I. SUMMARY

In April, 1981, the Regional Office of Facilities, Engineering and Construction (ROFEC), Department of Health and Human Services requested that the National Institute for Occupational Safety and Health (NIOSH) perform a Health Hazard Evaluation at the Social Security Administration (SSA) Office, 473 Broadway, Newburgh, N.Y. 12550. The Health Hazard request specified that there was a problem at the office with "odors". On April 24th, the manager of the office was telephoned and he indicated that carbon monoxide exposures may be involved after recent changes to the office's air supply system.

On April 29th, a representative of NIOSH visited the office and measured concentrations of carbon monoxide, hydrogen sulfide, sulfur dioxide, temperature, relative humidity and air velocity. Carbon monoxide concentrations were six parts per million parts of air (ppm) or less. No hydrogen sulfide or sulfur dioxide was detected. Other parameters (temperature, etc.) were in the comfort range.

Although no excessive exposures to contaminants were detected during the NIOSH survey, an inspection of the air handling system disclosed several conditions which could affect the quality of the air supplied to the office. Recommendations are made to correct those conditions.

KEYWORDS: SIC 9441 (Administration of Social Programs), carbon monoxide, sulfur dioxide, hydrogen sulfide, ventilation, office problems.

II. INTRODUCTION

The Regional Engineer of the Regional Office of Facilities, Engineering and Construction (ROFEC) submitted a request for a Health Hazard Evaluation to the National Institute for Occupational Safety and Health (NIOSH). The request concerned complaints about objectionable odors at a Social Security Office located at 473 Broadway, Newburg, New York. Between the time of the request (early April, 1981) and the time of the site visit (4-29-81) changes were made to the air handling system which may have fed carbon monoxide into the office's air supply system. These changes were corrected before NIOSH's site visit. During the site visit, concentrations of carbon monoxide, hydrogen sulfide, sulfur dioxide, air temperature, relative humidity and air movement were monitored.

III. Background

The (SSA) office occupies the eastern two-thirds of the ground floor of a building constructed in 1958. The other occupants of the building are a Post Office, which shares the ground floor, and an Internal Revenue Service (IRS) office, which occupies the second (top) floor. About 50 employees work in the SSA office and, at maximum, 50 clients may be in the office at any one time. The SSA office originally was 120' long by 50' wide by 10' high, and was equipped with two oil fired, 90 BTU heating/air conditioning units, one located on each side of the office. In 1973, a 20' addition was constructed on the rear of the building. It was equipped with a 150 BTU unit, which was housed in the same room as the 90 BTU unit which serves the west side of the office. In 1974, another 20' addition was constructed on the rear of the building. This area receives its heating/air conditioning from the units located in the IRS office. The SSA office manager believes that all of the units recirculate about 80% of the air they handle.

Until mid-April of this year, the unit serving the east side of the SSA office took its return air from the men's rest room. Very often, bathroom odors were distributed into the SSA office. On April 23rd, ductwork was installed to supply air to this unit directly from the office, bypassing the men's room. Inadvertently, the new ductwork was installed so that flue gasses from the unit were fed into the air distribution system. On April 27th, the office was closed, and the heating units were inspected by the Newburg Plumbing and Heating inspector who recommended changes in the ductwork. The exhaust diffuser of the west-side unit was moved to an exterior wall by the morning of April 28th, and the office was reopened.

IV. SAMPLING AND EVALUATION

On April 29, 1981, a representative of NIOSH inspected the office and performed environmental monitoring of temperature, relative humidity, air movement, carbon monoxide, hydrogen sulfide and sulfur dioxide.

No disagreeable odors were noticed and no hydrogen sulfide (limit of detection = 5 ppm) or sulfur dioxide (limit of detection = 0.5 ppm) could be detected using commercially available detector tubes as the detection media. NIOSH recommends that exposure to hydrogen sulfide be less than 10 ppm for any 10 minute period; and that exposure to sulfur dioxide be less than 0.5 ppm as a time weighted average for a 40 hour work week.

The outdoor temperature was in the 70-75°F range. Indoor temperatures were 78 to 80°F, except in the data access room (SSADARS) where the temperature was 80 to 85°F. The employees in SSADARS stated that the temperature in their room often approached 90°F. Even though the temperature was unseasonably warm, the office manager kept the heating systems in operation during most of the day for the purposes of the NIOSH study. Outdoor relative humidity was about 70-75 %; indoor relative humidity was 50-55%.

Carbon monoxide levels were measured using commercially available detector tubes (limit of detection = 5 ppm) and a portable carbon monoxide analyzer fitted with a strip-chart recorder (limit of detection = 1 ppm). Carbon monoxide concentrations throughout the work area in the original part of the office and the first addition were approximately 6 ppm at 10:30 AM, and diminished steadily during the day to a minimum of 2 ppm from 2 to 4 PM. Carbon monoxide concentrations in the third addition were 4 to 5 ppm in the morning and diminished to 2 ppm in the afternoon. Carbon monoxide concentrations, as measured at two inlet grills (one on each side of the office) were approximately 2 to 3 ppm whether or not the heating units were in operation, indicating that the heating units were no longer a source of contamination. NIOSH recommends that exposure to carbon monoxide be limited to 35 ppm or less as a time weighted average over a 40-hour work week.

The two original air handling systems have been modified over the years. Each system has 5 inlet grills to feed air into the office. Half of them have been blocked to provide more heat or air conditioning to the reception area in the front of the office. Those inlet grills which are in operation provide air at 300 to 600 linear feet per minute at the grill surfaces. Air movement at desk-top level is less than 15 linear feet per minute, the limit of detection of the instrument used. There are 8 return grills (5 east and 3 west). Four of these have been blocked.

V. CONCLUSIONS AND RECOMMENDATIONS

All contaminants measured were within acceptable limits. NIOSH makes the following recommendations based on an inspection of the SSA office's ventilation system.

1. The exterior fresh-air intake grill for the east side heating/air conditioning unit is located about five feet inside the loading dock used by the Post Office's delivery trucks. The manager of the SSA office stated that Post Office personnel often leave truck motors running during delivery, especially in the Winter. To minimize the potential for contamination of motor exhaust products and carbon monoxide being fed into the SSA office's ventilation system, this intake should be extended to the roof of the building.

2. The exterior fresh-air intake grill that supplies air to the room which houses the west side heating/air conditioning units is about 90 square inches. The area of this grill was adequate (one square inch per 10 BTU) to supply air for the original 90 BTU unit. However, the 150 BTU unit which supplies air to the first addition was placed in the room in 1973, and also receives its fresh air supply through the 90 square inch grill. The grill's surface area is inadequate to supply air to both units. As a consequence, the units probably recirculate more internal (stale) air than they are specified to do. This fresh-air intake grill should be enlarged to at least 240 square inches.

3. The temperature in the data access office (SSADARS) often exceeds 80°F, due to heat build-up from the data accessing equipment. This area should be equipped with an air chiller to provide comfort to personnel as well as reducing "down time" of the data accessing equipment.

4. Through the years, the ventilation of the SSA office has been altered by addition of units, space and blockage of intake and exhaust grills. In theory, the office should be supplied at least 6 air changes per hour (about 450,000 cubic feet of air). Because of the varying sizes and air flow rates from the distribution grills, it is difficult to determine the quantity of air supplied to the SSA office. Drafts of air flow through open doors into the office area, indicating that the quantity of air supplied to the office is inadequate. NIOSH recommends that a heating/air conditioning consultant evaluate the SSA office's ventilation system and provide recommendations to improve the safety and efficiency of the system.

VI. REFERENCES

1. NIOSH/OSHA Pocket Guide to Chemical Hazards. DHEW (NIOSH) Publication No. 78-210
2. ASHRAE Standard 62-73, "Natural and Mechanical Ventilation. Requirements". Americal Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (1977)

VII. AUTHORSHIP AND ACKNOWLEDGEMENTS

Evaluation Conducted and Report Prepared by:

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Originating Office

Hazard Evaluation and Technical Assistance Branch, Division of Surveillance, Hazard Evaluations and Field Studies.

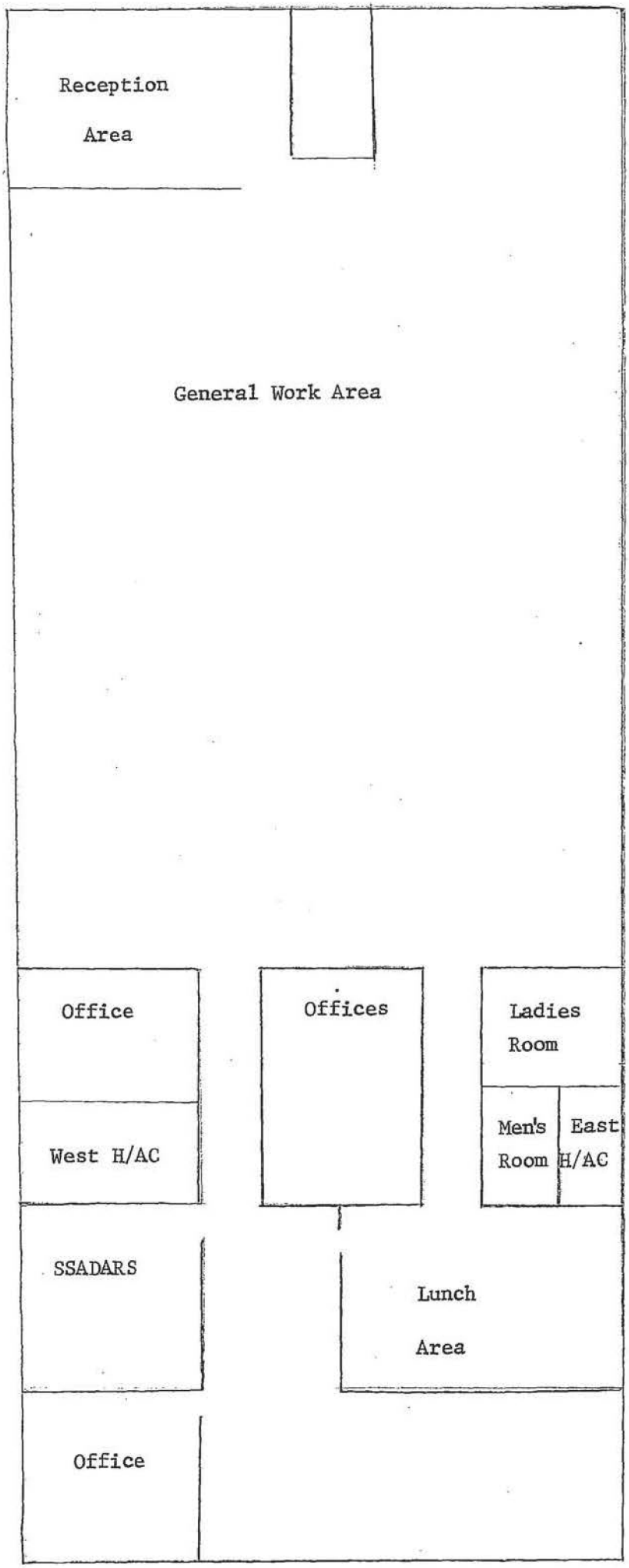
VIII. DISTRIBUTION AND AVAILABILITY OF REPORT

For the purpose of informing affected employees, the employer shall promptly post this report for 30 days in a prominent place(s) near where exposed employees work.

Copies of this report currently are 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 from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Va. 22151. Information regarding its availability through NTIS can be obtained from the NIOSH Publications Office at the Cincinnati address.

Copies of this report have been sent to:

1. SSA Office, 473 Broadway, Newburg, N.Y.
2. On-site Representative, AFGE #3343, % SSA Office, 473 Broadway, Newburg, N.Y.
3. Regional Engineer, ROFEC, DHHS, Rm 3309, 26 Federal Plaza, N.Y., N.Y.
4. U. S. Dept. of Labor, OSHA, Region II Office, N.Y., N.Y.
5. U. S. Dept of Health & Human Services, NIOSH, Region II Office, N.Y., N.Y.
6. N.Y. State Dept. of Health, Albany, N.Y.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General Work Area
SAA
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Office
Offices
Ladies
Room
West H/AC
Men's
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SSADARS
Lunch
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1st Addition
Office
2nd Addition