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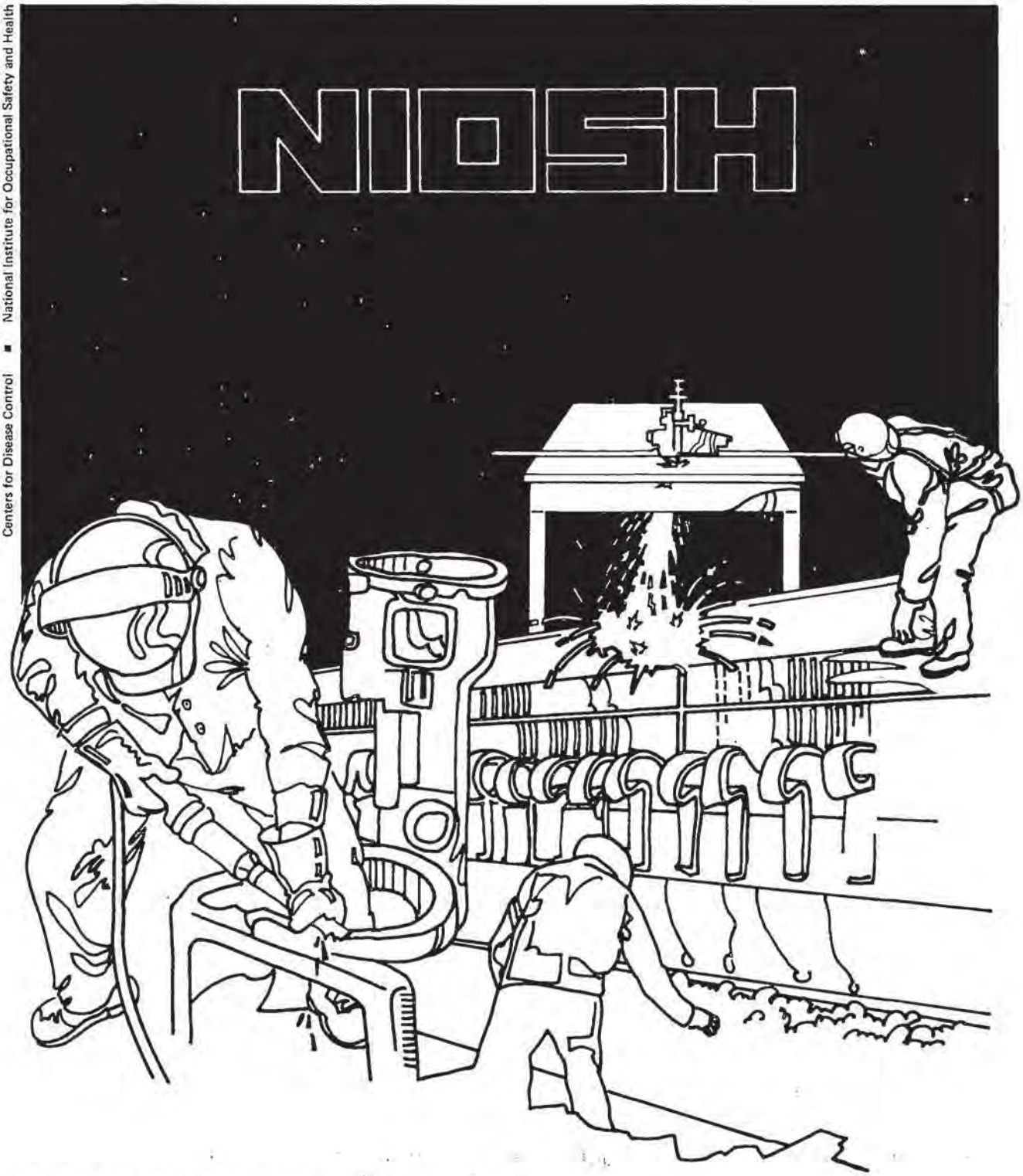

Health Hazard Evaluation Report

HETA 81-006-849
MOUNTAIN BELL
FORT COLLINS, COLORADO

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.

Mention of company names or products does not constitute endorsement by the National Institute for Occupational Safety and Health.

HETA 81-006-849
APRIL 1981
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NIOSH INVESTIGATOR:
Bobby J. Gunter, Ph.D., IH

I. SUMMARY

In October 1980 the National Institute for Occupational Safety and Health (NIOSH) received a request from Mountain Bell to evaluate exposures to emissions from continuously operating copying machines at their telephone ordering center at Fort Collins, Colorado. The two employees who operated the copying machines complained of burning eyes, cough, headaches, fatigue, and pulmonary irritation. These symptoms are all compatible with ozone exposure. Industrial hygiene evaluations were performed on November 14, November 20, and December 10, 1980. General room and breathing zone air samples were taken for determination of potential exposures to ozone. The only source of ozone at this facility was the air emitted from two copying machines located in the same room. General room air samples were taken in this room and in the breathing zone of the two workers operating the copying machines.

On the first two visits, direct reading detector tubes showed trace quantities of ozone (less then 0.2 mg/M^3). Therefore, long term air samples were taken on the December 10 survey. All air samples on this visit were below the laboratory limit of detection of 0.001 mg/M^3.

Between the initial and follow-up surveys, Mountain Bell installed ventilation on both copying machines. This totally eliminated any emissions coming into the room from both machines. Both operators of the copying machines noticed an improvement in the room's air quality.

On the basis of the environmental data, NIOSH concluded that a health hazard did not exist from exposure to ozone at the Mountain Bell telephone ordering center at Fort Collins, Colorado. Recommendations on ventilation and work practices are included in Section VIII of this report.

KEYWORDS: SIC 4811 (Telephone Communication/Wire or Radio), ozone, copying machines

II. INTRODUCTION

NIOSH received a request in October 1980 from management at Mountain Bell to determine if there was a health hazard from exposure to emissions from continuously operating copying machines at the telephone ordering center at Fort Collins, Colorado. Environmental evaluations were conducted on November 14, November 20, and December 10, 1980.

III. BACKGROUND

This request originated from management at the Mountain Bell facility at Fort Collins. The area of concern consisted of a small room in the basement of this facility. Two large copying machines continuously operated from 1:00 p.m. to 10:00 p.m. five days a week. The two workers in this room had symptoms such as eye irritation, cough, headaches, and fatigue. Such symptoms are compatible with ozone exposure.

IV. ENVIRONMENTAL DESIGN AND METHODS

Ozone was measured by using direct reading detector tubes. Long term breathing zone and general room air samples were taken with impingers and analyzed according to NIOSH P&CAM Method No. 154.

V. EVALUATION CRITERIA

A. Environmental

Two sources of criteria were used to assess the workroom concentrations of ozone: (1) American Conference of Governmental Industrial Hygienists' (ACGIH) Threshold Limit Values (TLVs); (2) Occupational Safety and Health Administration (OSHA) standards (29 CFR 1910), January 1978.

	Permissible Exposure Limits 8-Hour Time-Weighted Exposure Basis
Ozone.....	0.2 mg/M^3 (TLV) (OSHA)

mg/M^3 = milligrams of substance per cubic meter of air.

Occupational health standards are established at levels designed to protect individuals occupationally exposed to toxic substances on an 8-hour per day, 40-hour per week basis over a normal working lifetime.

B. Toxicological

Ozone is a bluish colored gas with a pungent odor. The pulmonary system is the target area for ozone. Signs and symptoms of ozone exposure include eye irritation, cough, headache, vertigo, drowsiness, fatigue, and pulmonary irritation. Pulmonary edema from high exposures has been reported. These symptoms may persist for six to nine months. Permanent disability has not been reported.[1] Ozone

intoxication can mimic the common cold, influenza, sinusitis, bronchial asthma, bronchopneumonia, pulmonary embolism, and myocardial infarction.[2] Maintaining levels below 0.2 mg/M^3 for an 8-hour day, 40-hour week should eliminate any medical problems and employee complaints.

VI. ENVIRONMENTAL RESULTS

The direct reading environmental samples indicated trace quantities of ozone. There was also a slight ozone odor present. Therefore, long term environmental samples were taken. These samples were collected after Mountain Bell installed ventilation. All samples were below laboratory detection limit of 0.001 mg/M^3.

VII. DISCUSSION AND CONCLUSIONS

A health hazard did not exist at the time of this evaluation. This conclusion is based upon the nondetectable levels of ozone. The ventilation system was adequate and review of blueprints showed that all emissions from the ventilation system went to the outside of the building. The two workers did not have symptoms after the ventilation was installed.

VIII. RECOMMENDATIONS

1. Adequate ventilation (such as that installed in this facility) should be put on other copying machines unless they are in a well ventilated area. Ventilation is probably not necessary if the copying machines are installed in rooms with adequate ventilation.

2. If employees complain of symptoms of ozone intoxication, immediate checks should be made for ozone exposure.

IX. REFERENCES

1. Plunkett, E.R., Handbook of Industrial Toxicology, Chemical Publishing Co., Inc., New York, 1976, pp. 315-316.

2. Proctor, N.H., Chemical Hazards of the Workplace, J. B. Lippincott Company, Philadelphia, 1978, pp. 396-397.

X. AUTHORSHIP AND ACKNOWLEDGMENTS

Report Prepared By:

Bobby J. Gunter, Ph.D.
Regional Industrial Hygienist
NIOSH, Region VIII
Denver, Colorado

Originating Office:

Hazard Evaluation and Technical Assistance Branch (HETAB)
Division of Surveillance, Hazard Evaluations, and Field Studies (DSHEFS)
NIOSH, Cincinnati, Ohio

Report Typed By:

Marilyn K. Schulenberg
NIOSH, Region VIII
Denver, Colorado

XI. DISTRIBUTION AND 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. Information regarding its availability through NTIS can be obtained from NIOSH, Publications Office, at the Cincinnati address.

Copies of this report have been sent to:

1. Mountain Bell.
2. U.S. Department of Labor/OSHA - Region VIII.
3. NIOSH - Region VIII.
4. Colorado Department of Health.
5. State Designated Agency.

For the purpose of informing affected employees, a copy of this report shall be posted in a prominent place accessible to the employees for a period of 30 calendar days.

TABLE 1

Breathing Zone and General Room Air Concentrations of Ozone
in Copying Room

Mountain Bell
Fort Collins, Colorado

December 10, 1980

Job Classification	Sampling Time	Ozone (mg/M^3)
Copy Person	11:15 AM - 5:00 PM	*
Copy Person	11:15 AM - 5:05 PM	*
General Room	11:35 AM - 5:08 PM	*
General Room	11:40 AM - 5:08 PM	*
	EVALUATION CRITERIA	0.2
	LABORATORY LIMIT OF DETECTION	0.001

* = below laboratory limit of detection

DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
CENTERS FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
ROBERT A. TAFT LABORATORIES
4676 COLUMBIA PARKWAY, CINCINNATI, OHIO 45226

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