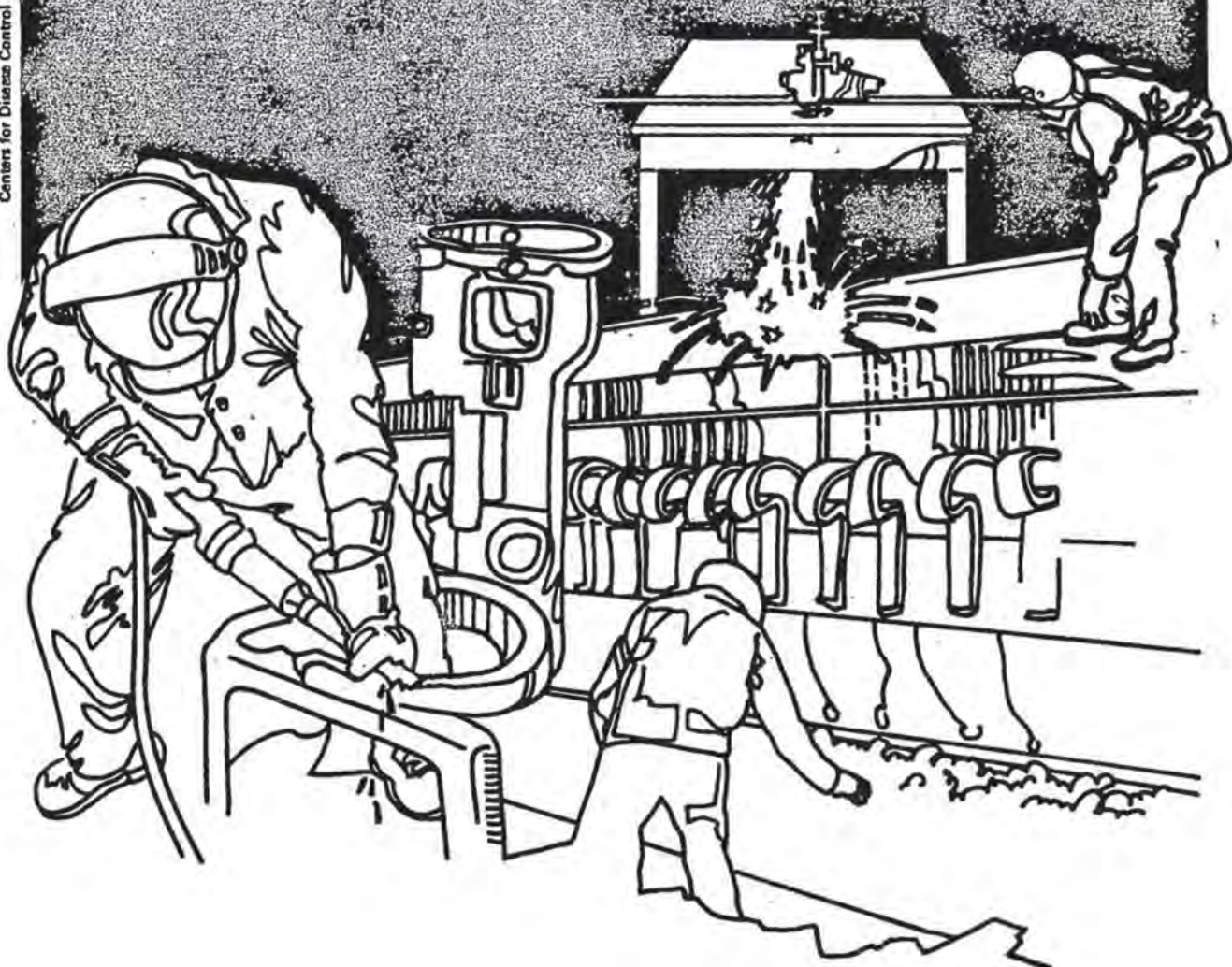


NIOOSH



Health Hazard Evaluation Report

HETA 82-332-1177
ONE HOUR OPTICAL
LAKEWOOD, 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 82-332-1177
ONE HOUR OPTICAL
LAKEWOOD, COLORADO
SEPTEMBER 1982

NIOSH INVESTIGATORS:
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I. SUMMARY

In July 1982 the National Institute for Occupational Safety and Health (NIOSH) received a request from management of One Hour Optical, Lakewood, Colorado, to evaluate a potential health hazard from unknown exposures in an office environment.

On June 28, 1982, two workers at One Hour Optical developed headaches and nausea at work. There was concern that these symptoms were due to Freon exposures while working.

On July 1, 1982, NIOSH investigators visited the optical shop. Upon entering the shop a slight odor was detected which reminded one of a new office, particularly the smell of new carpeting. On July 2, 1982, direct reading environmental samples for hydrocarbons, ozone, carbon dioxide, and carbon monoxide were collected and failed to show any exposures. Two general room air samples were collected for Freon and submitted for laboratory analysis. Concentrations of Freon were below laboratory detection limits of 0.02 milligrams per sample.

The headache and nausea reported by the employees were probably caused by lubricants and coatings in the air conditioning unit becoming hot and possibly off-gassing since this was the first time the air conditioner was used. Such an occurrence is very unlikely to happen again. Both medical and environmental findings eliminated the possibility of significant toxic exposures existing in this optical shop.

On the basis of the environmental, medical, and engineering data, NIOSH concluded that a health hazard did not exist at the time of this survey at One Hour Optical. Recommendations on eliminating future complaints are included in this report.

KEYWORDS: SIC 8042 (Offices of Optometrists), Freon, office environment.

II. INTRODUCTION

In July 1982 the National Institute for Occupational Safety and Health (NIOSH) received a request from management of One Hour Optical, Lakewood, Colorado, to evaluate a potential health hazard from unknown exposures in an office environment. On July 1-2, 1982, an environmental and medical evaluation was conducted. Environmental and medical results were discussed with management on August 4, 1982.

III. BACKGROUND

One Hour Optical is a typical shop providing optical services to consumers. This shop is one of approximately six shops located in a new shopping center built adjacent to each other the size of each varying from 1200 to 2000 square feet. Each shop has its own air conditioning system. New wall to wall carpeting had been installed.

IV. EVALUATION DESIGN AND METHODS

Two general room air samples were collected for Freon on charcoal tubes using vacuum pumps operated at 50 cubic centimeters per minute and analyzed according to NIOSH Method S-102.

Direct reading air samples were collected for hydrocarbons, carbon monoxide, carbon dioxide, and ozone using Dräger® direct reading sampling tubes and pump.

The one available employee who complained of medical problems and the office manager were interviewed by the NIOSH physician.

V. EVALUATION CRITERIA

A. Environmental

Two sources of criteria used to assess the workroom concentrations of the chemicals were (1) recommended Threshold Limit Values (TLVs) and their supporting documentation as set forth by the American Conference of Governmental Industrial Hygienists (ACGIH), 1981, and (2) the Occupational Safety and Health Administration (OSHA) standards (29 CFR 1910.1000), July 1980.

Permissible Exposure Limits
8-Hour Time-Weighted
Exposure Basis

Chlorodifluoromethane (Freon 22)..... 3500 mg/M³ (OSHA) (ACGIH)

mg/M³ = 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

Freon -- Mild central nervous system depression may occur in cases of exposure to very high concentrations of Freon. Symptoms from acute exposure may manifest themselves in occasional tremor and incoordination.¹ High Freon exposures may cause a shallow rapid pulse. Liver and kidney damage have been reported.²

VI. RESULTS AND DISCUSSION

A. Environmental

On July 2, 1982, two general room air samples were collected for Freon for laboratory analysis. Concentrations of both samples were below the laboratory detection limit of 0.02 milligrams per sample.

Direct reading air samples were collected for hydrocarbons, ozone, carbon dioxide, and carbon monoxide. All samples had nondetectable levels.

B. Medical

From interviewing one of the two workers who became ill on June 28, 1982, it is very unlikely that either of the two workers were suffering from Freon poisoning. The headache and nausea reported were probably caused by lubricants and coatings in the air conditioning unit becoming hot and possibly off-gassing since this was the first time the air conditioner was used. Such an occurrence is very unlikely to happen again. Both medical and environmental findings eliminated the possibility of a toxic situation existing in this optical shop.

VII. CONCLUSION

Based on environmental data, interviews with an employee, and personal observations, a hazardous situation did not exist at the time of this survey at One Hour Optical. This conclusion is primarily based upon the absence of any air contaminants at the time of the evaluation.

VIII. RECOMMENDATION

Leaving the doors open at the beginning of the heating and air conditioning seasons so that any lubricant odors would be ventilated out the door is recommended.

IX. REFERENCES

1. Industrial Hygiene and Toxicology, second edition, Frank Patty (editor), Interscience Publishers, 1967, Vol. II, page 1035.
2. Occupational Disease - A Guide to Their Recognition, revised edition, June 1977, DHEW (NIOSH) Publication No. 77-181, page 203.

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XI. DISTRIBUTION AND AVAILABILITY

Copies of this report are currently available upon request from NIOSH, Division of Standards Development and Technology Transfer, 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. One Hour Optical.
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.

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