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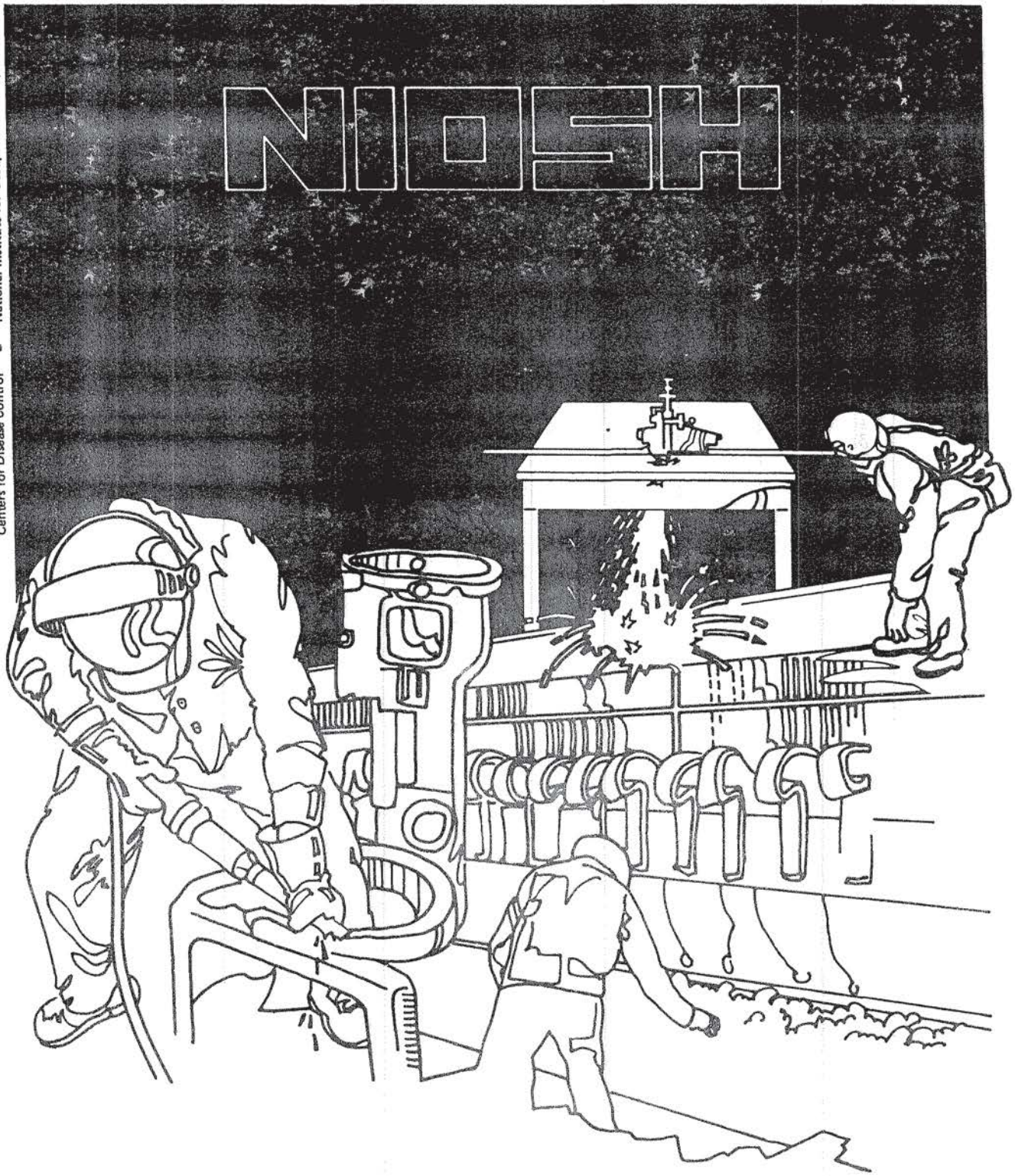

Health Hazard Evaluation Report

HETA 81-097-1021
MCCALL PUBLISHING COMPANY
NEW YORK CITY, 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.

HETA 81-097-1021
December 1981
McCall Publishing Company
New York City

NIOSH INVESTIGATOR:
Nicholas Fannick, MS,MPH
Industrial Hygienist

I. SUMMARY

In December 1980, the National Institute for Occupational Safety and Health (NIOSH) received a request for a health hazard evaluation from the McCall Publishing Company, 230 Park Avenue, New York City, N.Y. The request concerned intermittent exposure to a contaminant(s) with a diesel-like odor. Approximately 25% of the 130 employees working in the offices complained of a metallic taste in the mouth, nose and throat irritation, headaches, tearing, dizziness and/or nausea. The complaints began in late Winter or early Spring of 1980, abating during the summer months and recurring again in late Fall. The symptoms occurred concurrent with awareness of the odor.

The Regional NIOSH office provided an immediate response with the next occurrence of the odor on December 30th. Environmental samples were collected using detector tubes and charcoal tubes as the collection medium in the affected offices. No contaminants were detectable upon gas chromatographic/mass spectrophotometric analysis of the samples. Again, the complaints abated with the return of warm temperatures and have not recurred to date.

During the investigation, it was noticed that smoke from salamanders used to provide heat at an adjacent construction site occasionally blew into the air intakes of 230 Park Avenue. It is possible that this is the source of the contamination in the offices. The construction has been completed. If the smoke was the source of the contamination, the complaints should not recur.

Since no contaminants were detected and the odors and symptoms have abated, no recommendations are considered necessary.

Keywords: SIC 2721 (Publishing magazines) diesel exhaust, eye irritation, indoor air pollution

II. INTRODUCTION

In December 1980, the National Institute for Occupational Safety and Health (NIOSH) received a request to perform a health hazard evaluation at the editorial offices of the McCall Publishing Company, which are located on the seventh floor of 230 Park Avenue, New York City. The employees who work in the editorial offices were concerned about intermittent symptoms of eye, nose and throat irritation, headaches, dizziness, nausea and a metallic taste which usually were concurrent with a "diesel-like" odor.

III. BACKGROUND

The editorial offices of McCall's and Working Mother magazines are located on the seventh floor of 230 Park Avenue. The complaints were limited to the offices located in the East and Northeast part of the office complex. Approximately 130 persons work in the affected area. Thirty to forty of the employees have occasionally been bothered by the symptoms listed above. The symptoms are often associated with an odor which was described as "diesel-like" or chemical. Many of the employees walk through Grand Central Railroad Station of their way to and from work, and they compared the odor in their office to the odor in the train station. The offices are supplied with tempered air from a central ventilation system. The building's windows can be opened. The office equipment consists of typewriters and a few duplicating machines. There have been minor changes in offices and personnel, but nothing new has been introduced into the area for several years. The building was completed in the 1930's. McCall's offices have occupied their present area since the 1950's with no previous complaints.

Two local sources for a diesel-like contaminant were noted and considered as possible causes of the problem. As mentioned above, Grand Central Railroad Station is located two blocks South of 230 Park Avenue. The Penn Central Railroad tracks run under the building. Two of the railroad's three lines are completely diesel powered, and the other line runs a few diesel trains. A diesel-like odor is easily identified in Grand Central Station and occasionally perceived in the lobby of 230 Park Avenue. The building engineer of 230 Park Avenue stated that there are no connections between the building's ventilation system and the underground track level, that no changes have been made to the building's ventilation system in several years and that he was unaware of any odor complaints from the building's occupants. There is no direct public access to the train tracks from 230 Park Avenue. The lowest air intake at 230 Park Avenue is located on the 4th floor level. It is unlikely that the railroad acts as a source of the odor. The railroad tracks have been under the building for almost 50 years with no major complaints from the building's occupants and the building's lowest air intakes are several stories above street level.

The other, more probable source of the contamination was from a construction site, on the block adjacent to and east of 230 Park Avenue. The air intakes for the ventilation system that serves the first 12 floors of 230 Park Avenue are located on the 4th floor level and are about 60 feet from the site of a new skyscraper under construction for the past two years. At the time of the environmental survey, the framework of the new building was completed. Smoke from the salamanders used to provide heat at the construction site was observed being blown across the street into the air intakes of 230 Park Avenue. Furthermore, the odor had been noticed only in cold months, when the salamanders would be in use. The prevailing winds are from the West, which may account for the intermittency of the odors.

IV. SAMPLING STRATEGY

Hydrocarbon based contaminants are suspect with complaints such as minor eye, nose and throat irritation, dizziness and nausea. A diesel- like odor might indicate a need for the collection of samples using filters as the collection media, however no particulate was associated with the complaints and the use of filters was considered unnecessary. It was decided to use glass tubes containing activated charcoal as the collection media. Hydrocarbons are adsorbed onto the surface of the charcoal as contaminated air is passed through the tubes. The hydrocarbons are desorbed with carbon disulfide in a laboratory and the sample is analyzed using a standardized gas chromatographic/mass spectrophotometric analytical method. When a sample is analyzed by this method, a graph of the hydrocarbons is constructed. As a sample is heated, hydrocarbons are evaporated at a specific temperatures and are detected in turn. Organic hydrocarbons will produce characteristic graphs by which they may be identified. The height of a graph is proportional to the concentration of the material identified. This analytical method is not limited to the identification of any specific hydrocarbon, but is valid for a large number of hydrocarbons. Thus this analytical method is especially useful when the contaminant(s) are not known.

As 230 Park Avenue can be reached in 20 minutes by subway from the regional NIOSH headquarters, it was decided that McCall office personnel would alert the NIOSH investigator at the time of the next occurrence of the odor. This happened on December 30, 1980 and NIOSH collected environmental samples on that day. Direct readings of carbon monoxide, carbon dioxide were made using detector tubes as the collection media. Carbon monoxide levels were three to five parts per million parts of air (ppm), which is normal for an area where cigarette smoking occurrs. Carbon dioxide levels were approximately 300 ppm. Exposure to these levels would not be expected to produce any symptoms.

In addition, eight samples were collected in the two offices where the odor was most noticeable, by drawing air for about 4 hours through charcoal tubes at a rate of 2 liters per minute. A total sampling volume of about 500 liters would enable detection of typical organic hydrocarbons (such as xylene) at a concentration of about 0.1 milligram per cubic meter

or less. It should be noted that many complex organic hydrocarbons have odor thresholds in concentrations far less than this amount, but usually are found with less complex substances which can act as "tracers" to identify a complicated group of contaminants such as may be generated by diesel fuel or heating oil.

V. SAMPLING RESULTS

No contaminant could be detected upon gas chromatographic/mass spectrophotometry analysis of the samples. The fact that no hydrocarbons were detected indicates either that extremely small concentrations were present or that the contaminants are not hydrocarbons. NIOSH considers the latter possibility to be unlikely considering that the characteristic odor of the contaminant is that of a hydrocarbon material and the fact that the possible sources of the contaminant (diesel fuel, oil soaked construction debris or heating fuel) contain chemicals with extremely low odor thresholds.

VI. DISCUSSION

NIOSH has had considerable experience in dealing with office or indoor air pollution cases. While each situation has different factors, there are a number of common elements. Usually there is a "triggering mechanism": something new (usually a contaminant) is introduced into the office environment, and causes or coincides with an initial episode of symptoms. The contaminant may have a characteristic, subtle odor which results in a feeling of discomfort or symptoms. In some cases, the contaminant causes the symptoms, but sometimes it is associated with an underlying or pre-existing condition such as fatigue or the common cold.

It is possible that the employees housed at McCall Publishing Company's 7th floor offices were affected by contamination generated from the construction site located one block East of their building. The complaints coincided with the first use of the salamanders in the Winter of 1980-81. The complaints abated during warm weather and resumed with the return of cold temperatures. The intermittency of the odor and symptoms may have been affected by the fact that the prevailing wind direction is from the West; 230 Park Avenue is usually upwind from the construction site. The affected area was confined to the offices in the eastern part of the building (nearest to the construction site) and to the offices in the northeastern part of the building. The contamination may have been introduced into the area by the ventilation system or through open windows. Several of McCall's employees identified the odor as diesel-like. The fuel for salamanders is usually oil soaked construction debris or heating oil (diesel oil is #2 heating oil). The odor and symptoms in the offices have abated and, with the completion of the near-by construction, should not recur if the smoke was the cause.

VII. RECOMMENDATION

Since no contaminants were detected, and the conditions which existed at the offices have abated, no recommendations are considered necessary.

VIII. AUTHORSHIP AND ACKNOWLEDGEMENT

Evaluation Conducted and Report Prepared by:

Nicholas Fannick
Industrial Hygienist
NIOSH/Region II

Originating Office:

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

IX. DISTRIBUTION AND AVAILABILITY OF REPORT

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

Copies of this report currently are available upon request from NIOSH, Division of Standards Development and Technical Transfer, 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, Virginia 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. McCalls Publishing Company.
2. U.S. Department of Labor, OSHA, Region II, NY, NY.
3. U.S. Department of Health & Human Services, NIOSH, Region II, NY, NY.
4. N.Y. State Department of Health, Albany, NY.

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