U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
CINCINNATI, OHIO 45202

HEALTH HAZARD EVALUATION DETERMINATION
REPORT NO. 72-122-97

DIESEL EQUIPMENT DIVISION, G M C
WYOMING, MICHIGAN
DECEMBER, 1973

I. TOXICITY DETERMINATION

It has been determined that the airborne concentrations of carbon dioxide, carbon monoxide, nitrogen dioxide and sulfur dioxide are not toxic as measured in the Assembly, Calibration, Cold Header and Screw Machine Departments. This determination is based upon observation of the work areas and environmental samples collected in these departments.

II. DISTRIBUTION AND AVAILABILITY OF DETERMINATION REPORT

Copies of this Determination Report are available upon request from the Hazard Evaluation Services Branch, NIOSH, U.S. Post Office Building, Room 508, 5th and Walnut Streets, Cincinnati, Ohio 45202. Copies have been sent to:

a) Diesel Equipment Division, G M C
Wyoming, Michigan

b) Authorized Representative of Employees

c) U.S. Department of Labor - Region V

d) NIOSH - Regional Program Director; Region V

For the purposes of informing "affected employees" the employer will promptly "post" the Determination Report in a prominent place(s) near where affected employees work for a period of 30 calendar days.

III. INTRODUCTION

Section 20(a)(6) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 669(a)(6), authorizes the Secretary of Health, Education, and Welfare, following a written request by 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 National Institute for Occupational Safety and Health (NIOSH) received such a request from an authorized representative of employees regarding the medical condition of an employee with the allegation that the presence of noxious fumes (i.e., carbon dioxide, carbon monoxide, nitrogen dioxide, and sulfur dioxide) in some of the work areas caused or contributed to his respiratory tract problem and poor work record, and that other employees might be similarly affected.

IV. HEALTH HAZARD EVALUATION

A. Plant Process - Conditions of Use

The Diesel Equipment Division of the General Motors Corporation produces hydraulic valve lifters, diesel fuel injectors, diesel engine parts, piston pins, piston rings, jet fuel nozzles, and cold formed precision parts. The plant building area covers 1,200,000 square feet. Approximately 1900 employees work in the facility. The only source of combustion products is from fork lift trucks and floor cleaning devices operating within the plant.

B. Evaluation Design and Methods

An observational survey and environmental investigation was conducted on June 6, 1973.

Continous monitoring for carbon monoxide was performed in the Assembly, Calibration, Cold Header and Screw Machine Departments using a portable carbon monoxide detector. The departments investigated were selected by the employee representative. In addition, detector tube samples were collected in each of the departments to measure airborne concentrations of carbon dioxide, carbon monoxide, nitrogen dioxide, and sulfur dioxide.

C. Evaluation Criteria

The currently acceptable Occupational Health Standards as promulgated by the U.S. Department of Labor (Title 29, Chapter XVII, Part 1910, Subpart G, Section 1910.93, Table G-1) applicable to the substances measured for this determination are: carbon dioxide - 5000ppm (parts of gas per million parts of contaminated air), carbon monoxide - 50ppm, nitrogen dioxide - 5ppm, and sulfur dioxide - 5ppm.

Occupational health standards for individual substances are established at levels designed to protect workers occupationally exposed on an 8-hour per day, 40-hour per week basis over a normal working lifetime. Evaluation of exposures to multiple contaminents requires assessment of "total exposures" with regard to combined, potentiated, or inhibited toxic effects.

D. Evaluation Results and Discussion

The highest concentration of carbon monoxide measured was 30ppm in the Assembly Department, directly on an aisle, with fork lift trucks passing nearby. The average concentration of carbon monoxide was 15ppm measured in all four departments. No measurable concentrations of carbon dioxide, nitrogen dioxide, or sulfur dioxide were detected in any of the four departments investigated.

On the basis of measured airborne concentrations of the four chemical substances, one would not expect the majority of employees to be symptomatic. However, a sensitive individual, for example, an employee with a known respiratory allergy, may become symptomatic to a chemical substance, regardless of whether air concentrations are well within the acceptable threshold limit values for substances in the workroom air.

V. AUTHORSHIP AND ACKNOWLEDGMENTS

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