

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTER FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
CINCINNATI, OHIO 45226

HEALTH HAZARD EVALUATION DETERMINATION REPORT
HE 79-67-694

WESTERN GYPSUM COMPANY
SANTA FE, NEW MEXICO

JUNE, 1980

I. SUMMARY

On March 12, 1979, the National Institute for Occupational Safety and Health (NIOSH) received a request from an authorized representative of the AFL/CIO United Cement, Lime and Gypsum Workers International Union to evaluate possible hazards to board plant employees from gypsum dust in the work environment. On April 24, 1979, environmental samples were collected to determine airborne concentrations of gypsum dust. In addition, and at the same time, interviews were conducted with four (4) production area employees, in a non-directed manner, to identify any known or existing employee medical conditions. An air velocity meter was also utilized to measure exhaust velocities at various work stations within the board plant production area.

Results of four (4) personal breathing-zone and two (2) general area samples showed workroom concentrations of gypsum dust to be in the range of 0.83 - 2.45 milligrams per cubic meter (mg/M^3), or well below the American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Value (TLV) and the applicable U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) standard.

Employee interviews with four (4) persons performing duties in the board plant production area failed to identify work-related employee health problems.

An evaluation of ventilation within various areas of the wallboard plant showed exhaust velocities to range from 175-200 feet per minute, and thus considered adequate to collect any airborne gypsum dust particles from applicable wallboard area operations.

Based on results of environmental samples and employee interviews obtained during this investigation, NIOSH determined that a hazard of occupational exposure to gypsum dust did not exist in the board plant production area at Western Gypsum Company, Santa Fe, New Mexico.

A recommendation relating to the maintenance of the existing ventilation system is presented on page 3.

II. INTRODUCTION

Under the Occupational Safety and Health Act of 1970*, NIOSH is authorized to investigate the toxic effects of substances found in the workplace. On March 12, 1979, NIOSH received a request from the AFL/CIO United Cement, Lime and Gypsum International Union to investigate board plant employees exposure to gypsum dust.

III. BACKGROUND

Western Gypsum Company, Santa Fe, New Mexico, employs a total of seventy (70) persons, fifty-four of which are directly involved in the manufacture of gypsum wallboard. Personnel are assigned to such operations as mixing, supply, bundling, board trimming and inspection.

IV. EVALUATION METHODS AND MATERIALS

A. Environmental

An environmental evaluation of the facility was conducted on April 29, 1979. In order to more fully and adequately evaluate employee exposure to gypsum dust, environmental samples were collected in the wallboard production area, including the supply, mixing, bundling, board trimming and inspection operations.

Four (4) personal breathing-zone samples and two (2) general area samples were collected in the production area by using 5.0 micron polyvinyl chloride (PVC) membrane filters at a flow rate of 2.0 liters per minute. The tared filters were dried and ultimately weighed to obtain a total gypsum dust count for each sample.

A thermo anemometer air velocity meter was utilized to measure exhaust velocities at various locations within the board plant production area.

B. Medical

Interviews were conducted with four (4) board plant employees, in a non-directed manner, in an attempt to identify any workers with known respiratory conditions or other work-related health conditions resulting from their exposure to gypsum dust in that specific work area.

* 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 and Human Services, following receipt of a written request from an 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.

V. EVALUATION CRITERIA

Gypsum Dust

The basic material present in all gypsum plaster is the mineral gypsum (calcium sulphate), a non-toxic nuisance dust. Gypsum is rarely found in the pure state, and contains such compounds as clay, limestone, iron oxide and other impurities. None of those compounds are likely to pose a health hazard in the small quantities present.

Even though a dust may be considered generally innocuous and not be recognized as the direct cause of a pathological condition, its level should be maintained as low as is practical. The recommended permissible exposure limits for gypsum dust/nuisance particulate (total) are 10 milligrams per cubic meter (American Conference of Governmental Industrial Hygienists, 8-hour time-weighted average) and 15 milligrams per cubic meter (Occupational Safety and Health Administration, 8-hour time-weighted average).

With good engineering practice, there is no need for these levels to be exceeded. In addition, any further reductions will increase the comfort of employees and improve housekeeping.

VI. EVALUATION RESULTS AND DISCUSSION

A. Environmental

Results of the environmental sampling indicated that board plant production employees were not exposed to toxic levels of gypsum dust at the time of this investigation.

An evaluation of ventilation within various areas of the board plant showed applicable exhaust velocities to range from 175-200 feet per minute, and were thus considered adequate to collect potentially airborne gypsum dust particles from applicable operations within the plant.

B. Medical

Employee interviews with four (4) persons performing duties in the board plant failed to identify definite work-related health problems in that specific work area.

VII. RECOMMENDATIONS

In order to insure maximum collection efficiency for any airborne dust, continued special efforts should be made to maintain all mechanical exhaust systems in good working order.

VIII. REFERENCES

1. National Safety Council: Dusts, Fumes and Mists in Industry. Data Sheet 531, pp. 1-15, 1963.
2. American Conference of Governmental Industrial Hygienists: Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment with Intended Changes for 1979. pp. 32-34.
3. American Conference of Governmental Industrial Hygienists: Industrial Ventilation - A Manual of Recommended Practice. 15 Ed., Table 4-1, pp. 4-5.

IX. AUTHORSHIP AND ACKNOWLEDGEMENTS

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X. DISTRIBUTION AND AVAILABILITY OF DETERMINATION REPORT

Copies of this Determination Report are currently available upon request from NIOSH, Division of Technical Services, Information and Dissemination Section, 4676 Columbia Parkway, Cincinnati, Ohio, 45226. After ninety (90) days, the report will be available through the National Technical Information Service (NTIS), Springfield, Virginia, 22161. Information regarding its availability through NTIS can be obtained from NIOSH, Publications Office, at the Cincinnati, Ohio, address.

Copies of this report have been sent to:

- a) Western Gypsum Company, Santa Fe, New Mexico
- b) Authorized Representative of Employees
- c) U.S. Department of Labor, Region VI
- d) NIOSH, Region VI
- e) New Mexico Health and Environmental Department

Table 1
 Gypsum Dust (Nuisance Particulate) Concentrations
 Western Gypsum Company
 Santa Fe, New Mexico

April 24, 1979

<u>Sample Number</u>	<u>*Type of Sample</u>	<u>Location</u>	<u>Sampling Period</u>	<u>**Concentration (mg/M³)</u>
P-1	P	Mixer Man (1st level)	1319-1507	2.45
P-2	P	Supply Man (2nd level)	1321-1459	1.53
P-3	P	Bundler Operator (1st level)	1329-1502	0.43
P-4	P	Board Inspector (1st level)	1332-1508	0.47
P-5	GA	Supply Area (2nd level)	1334-1512	1.49
P-6	GA	Board Trimming Operation (1st level)	1335-1515	0.83

ACGIH, TLV Committee Recommendation Gypsum Dust (Nuisance Particulate).... 10.0
 OSHA Standard Gypsum Dust (Nuisance Particulate)..... 15.0

*P = Personal; GA = General Area

**mg/M³ = milligrams of substance per cubic meter of air sampled