May 27, 196

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Mr. L. Redmond Indust. Hygiene Highland P

AIR-BORNE ASBESTOS DUST CONCENTRATION - DEPARTMENT 7200



As requested on May 22, 1963, samples were collected to determine the air-borne asbestos dust concentrations created by the sawing and forming of brake linings. The exhaust ventilation system was also checked at this time.

The results obtained, which are listed on the attached sheet, indicated that the dust concentrations were at acceptable levels and that the exhaust ventilation system was functioning properly.

Louis Redmond
Senior Industrial Hygienist

LR:slh

cc: B. J. Sauber, M.D.
R. H. Weidner

FILE

DATE February 2

TO:		DIVISION	PLANT/OFFICE
	President	Chemical Division	Trenton Chemical
FROM:		DIVISION	PLANT/OFFICE
	Industrial Hygiene	Industrial Hygiene	Highland Park

SUBJECT:

PERIODIC INDUSTRIAL HYGIENE SURVEY

On January 8, 10 and 12, 1965, a periodic industrial hygiene survey of the Chemical Division Plant was completed by A. Gomez and the writer. During the survey concentrations of air-borne dust, toluene vapor, methyl ethyl ketone and trichloroethylene vapor were determined. Exhaust ventilation systems were observed, illumination levels were recorded and the toilet room facilities were inspected. Levels of air-borne contaminants, measurements and observations are listed on the attached data sheets.

SUMMARY AND RECOMMENDATIONS

1. TOLUENE DUST - Quantities of asbestos dust near the maximum allowable concentration were determined from some of the samples collected at breathing zone level of the two employees who operate the dry mixers on the balcony of the new building. Dust levels below the allowable limit were indicated by the results of samples collected at other brake lining dust producing operations. It is our recommendation that an effective cleanup procedure, including the use of a vacuum cleaner, be established in all areas where asbestos is present. Continuation of employees who operate the brake lining mixers to wear respirators as protection against inhalation of asbestos dust is recommended. Respirators should be worn until the time that approved exhaust ventilation is provided.

2. TOLUENE VAPOR - Excessive toluene vapor levels were indicated during the time of sampling of the following operations:

a. Removing the asbestos-solvent mixture from the Baker-Perkins mixers and placing it into wooden containers.
b. Shoveling the asbestos-solvent mixture into the extruder hoppers from the wooden containers.
c. Loading sheets onto the drying racks.
d. Moving the racks to the drying oven.

We recommend that effective ventilation be provided at these operations, with the exception of item "c", to reduce employee exposures to toluene solvent vapors. Installation of a non-porous material such as Plexiglas at the ends of the drying racks to a height slightly above head level would reduce employee exposures.

Mandatory wearing of U.S. Bureau of Mines approved vapor respirators by employees who perform the above operations is recommended until adequate ventilation control is provided.

DISCUSSION

DUST - The maximum allowable limit for asbestos dust as established by the State of Michigan Division of Occupational Health is 5 m.p.p.c.f. (million particles of dust per cubic foot of air). Dust levels of 1.5 to 5.7 m.p.p.c.f. were indicated by the results of samples collected at breathing zone level of employees who operate the balcony mixers. In order to maintain the air-borne dust at a satisfactory level, a continuous effort will be necessary to maintain a clean work room. Floors should be vacuum cleaned on a daily basis. An active preventative maintenance program of the exhaust systems where asbestos is handled is important in order to provide an effective dust control program.

TOLUENE VAPOR - The threshold limit value for toluene vapor is 200 p.p.m. (parts of toluene vapor per million parts of air). During the survey, concentrations up to 1300 p.p.m. were indicated during unloading of the Baker-Perkins mixer and when employees shoveled the asbestos-solvent mixture into the extruder hoppers. Vapor concentrations of 700 to 900 p.p.m. were recorded during the loading of slabs on the drying racks. L. T. Fairhall states in "Industrial Toxicology" that depression of bone marrow may occur when concentrations exceed 500 p.p.m. The level of 500 p.p.m. is exceeded frequently during the operations performed while handling brake lining materials. Use of vapor type respirators would provide protection against inhalation of the toluene. However, respirators are designed to protect against vapor inhalation in atmospheres that contain up to 1000 p.p.m. of organic vapor. Our data indicates that this level is exceeded during certain phases of the operation. Thus, it is our opinion that revisions of present exhaust ventilation and installation of additional exhaust ventilation is urgently needed to protect employees against the inhalation of excessive toluene solvent vapor.