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

HEALTH HAZARD EVALUATION DETERMINATION REPORT 73-149-140
FEDERAL-MOGUL CORPORATION
GALLIPOLIS, OHIO

JUNE 1974

I. TOXICITY DETERMINATION

Based on results of environmental evaluations, data obtained from the medical questionnaires, and the Industrial Hygienist's personal observations, it has been determined that a health hazard did exist at the time of this evaluation. This investigation was conducted on November 19, 1973. Nuisance dust and carbon monoxide concentrations exceeded established Federal standards as well as the 1973 threshold limit values (TLV) by the American Conference of Governmental Industrial Hygienists. Asbestos and copper concentrations were well below established standards; however, any exposure to asbestos could be potentially dangerous.

II. DISTRIBUTION AND AVAILABILITY

Copies of this hazard evaluation determination 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) Federal-Mogul Corporation
(b) Authorized Representative of Employees
(c) U.S. Department of Labor - Region V
(d) NIOSH - Region VIII

For the purpose of informing approximately 200 exposed employees, this report shall be posted in a prominent place readily accessible to workers for a period of at least 30 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 received such a request from the United Auto Workers, Local 1685, Gallipolis, Ohio, to evaluate the potential hazards associated with the alleged exposures to smoke and dust in various areas of the Federal-Mogul Corporation in Gallipolis, Ohio.

IV. HEALTH HAZARD EVALUATION

This plant, employing approximately 200 workers operating on three 8-hour shifts, manufactures automatic transmission parts such as gears and drive shafts for large automobiles. Powdered iron, with approximately 1% zinc stearate or Acra Wax added as a binder, and less than 1% graphite, is fed automatically into a large press which forms the metal powder into a solid gear or other transmission part. These parts are still fragile and are hand carried on a rack to the centering furnaces. The parts are conveyed through the furnaces either on metal or asbestos belts. Approximately 80 people work in this area. Asbestos exposures were likely to occur, since the asbestos conveyor belt decomposed after passage through the centering furnaces. Other areas of the plant were not sampled in any detail, since these areas were clean and mainly involved in quality control. Finished parts were all rinsed in a solution of Magnaflux and then observed under black light to see if any cracks or other imperfections were present.

B. Evaluation Design

All samples for dust were taken on cellulose ester and PVC filters in the workers' breathing zones. A total of 22 environmental breathing zone samples were collected, with a total of 41 chemical analyses performed. All analyses were performed in the Cincinnati laboratory, with the exception of asbestos, which was performed in the Salt Lake City laboratory. Direct reading carbon monoxide concentrations were made throughout the plant using the ecolyzer carbon monoxide instrument with a strip chart recorder. Non-directed interviews were conducted on 12 workers in an effort to find any complaints which could lead to work-related health problems. Complaints were mostly oriented toward too much dust and its effect on the respiratory system such as coughing and sneezing. One female worker in the Magnaflux operation complained of dermatitis.

C. Evaluation Criteria

The occupational health standards relevant to the substances of this evaluation as promulgated by the U.S. Department of Labor (Federal Register, October 18, 1972) are as follows:

Substance	mg/M^3	ppm	Fibers (per cc)
Total Dust	15		
Iron (Fe)	15		
Copper (Cu)	1		
Asbestos			5
Carbon Monoxide		50	

mg/M^3 - milligrams of contaminant per cubic meter of air

ppm - parts of vapor or gas per million parts of contaminated air by volume

Occupational health standards are established at levels designed to protect individuals occupationally exposed to individual toxic substances on an 8-hour per day, 40-hour per week basis over a normal working lifetime.

D. Evaluation Results and Discussion

This evaluation was done on November 19, 1973. The only area in the plant with high carbon monoxide concentrations was the tool crib. The highest concentration recorded here was 300 ppm. This was a peak concentration only lasting for several minutes. This leveled off to approximately 50 ppm, which lasted for about 30 minutes and for the remaining two hours of sampling, concentrations averaged from 35 to 40 ppm. Total dust and iron samples in the press area exceeded established Federal standards and the 1973 TLVs. These concentrations of iron in the press area ranged from 2 to 150 mg/M^3 of total dust. Iron concentrations ranged from 0.01 to 24.3 mg/M^3. All results may be reviewed in the Appendix. Copper and asbestos samples were collected; however, concentrations were negligible. Zinc stearate and Acra Wax were not analyzed, since these two compounds are used in medications such as pharmaceutical ointments and in dental waxes.

E. Recommendations

1. Since the area around the press was the only area showing excessive dust exposures, exhaust ventilation should be installed at this point to correct the exposure.

2. Until this exposure is corrected, workers should be provided with suitable respirators.

3. Exhaust ventilation should be provided in the tool crib area to prevent workers from being overexposed to carbon monoxide.

APPENDIX 1

FEDERAL-MOGUL CORPORATION - GALLIPOLIS, OHIO
November 19, 1973

Worker	Area	Sample Volume (Liters)	Sample Number	Total Dust mg/M^3	Iron (Fe) mg/M^3	Copper (Cu) mg/M^3	Asbestos Fibers (per cc)
C.G.	Press	120	PVC 46	30	3.0		
H.B.	Press	186	AA 1	50	1.6		
M.B.	Press	108	AA 2	80	0.1		
J.S.	Cu Plug	710	AA 3	10		0.02	
R.S.	Centering	60	PVC 47	10	0.17		
J.W.	Centering	676	PVC 44	2	0.01		
J.H.	Press	234	PVC 49	20	0.8		
B.S.	Grinding	630	PVC 50	50	4.6		
C.G.	Press	288	PVC 42	20	1.0		
M.B.	Press	160	PVC 41	50	24.0		
J.C.	Centering	476	PVC 43	3	0.1		
C.L.	Centering	548	PVC 48	2	0.18		
H.B.	Press	482	PVC 45	20	1.2		
M.B.	Press	124	PVC 9	100	8.8		
J.H.	Press	358	PVC 8	20	0.6		
S.G.	Press	200	PVC 10	40	0.25		
M.B.	Press	192	PVC 6	50	3.1		
W.G.	Grinding	34	PVC 7	150	5.5		
C.L.	Centering	134	AA 4				0.04
C.R.	Centering	126	AA 5				0.15
C.R.	Centering	124	AA 5(1)				TOO DIRTY TO READ
C.R.	Centering	250	AA 11				0.11
	FEDERAL STANDARDS			15	15	1	2

All of the above samples were taken in the workers' breathing zones.

V. AUTHORSHIP AND ACKNOWLEDGMENT

Report Prepared By:

Bobby J. Gunter, Ph.D.
Regional Industrial Hygienist
NIOSH Region VIII
Denver, Colorado

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Originating Office:

Jerome P. Flesch, Chief
Hazard Evaluation Services Branch
Cincinnati, Ohio