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

HEALTH HAZARD EVALUATION DETERMINATION REPORT 73-44-120
WHEELING-PITTSBURGH STEEL CORPORATION/MINGO PLANT
MINGO, OHIO

MARCH 1974

I. TOXICITY DETERMINATION

Based on the results of an environmental evaluation conducted by the National Institute for Occupational Safety and Health (NIOSH) on September 5, 1973, in the BOF building, BOF stock house, and BOF lime station, it has been determined that nuisance dust in the breathing zone of workers in the BOF stock house and the BOF lime station were at concentrations that could be hazardous.

II. DISTRIBUTION AND AVAILABILITY

Copies of this hazard evaluation determination are available from the Hazard Evaluation Services Branch, NIOSH, U.S. Post Office Building, Room 508, Fifth and Walnut Streets, Cincinnati, Ohio 45202. Copies have been sent to:

(a) Wheeling-Pittsburgh Steel Corporation
(b) Authorized Representative of Employees
(c) U.S. Department of Labor - Region V
(d) NIOSH - Region V

For the purpose of informing approximately 80 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 union representative, Local #1190, U.S.W.A., Steubenville, Ohio, to evaluate the potential hazards associated with the alleged exposures to air-borne concentrations of various contaminants present in the BOF, BOF stock house, and the BOF lime station at the Wheeling-Pittsburgh Steel Corporation, Mingo, Ohio, Plant.

IV. HEALTH HAZARD EVALUATION

A. Plant Process

The basic oxygen furnace (BOF) includes the BOF stock house and the BOF lime station. This department of the steel mill is where iron ore, coke, lime, and scrap metal are charged into an oxygen furnace. The product coming from this area is molten steel, which is poured into ingots which are then transferred to the rolling and scarfing areas. The BOF, in most instances, is much cleaner than its predecessor, the open hearth furnace. In general, the BOF was very clean from an industrial hygiene point of view.

The BOF stock house is an area where scrap metals are kept under roof to prevent moisture from accumulating on them. Moisture on the scrap will cause an explosion when added to a BOF. Workers in this area were monitored for total dust and iron.

The BOF lime station is the location where lime is fed to the blast furnaces by conveyor belts. Prior to going to the blast furnaces, the lime is heated. In areas where samples were taken for this hazard evaluation determination, the lime had not been heated and was analyzed as calcium carbonate, which is treated as a nuisance dust.

B. Evaluation Design

The BOF, the BOF stock house, and the BOF lime station employ approximately 80 workers. Most of these workers are removed from the industrial process. Therefore, in order to evaluate these areas, only five samples were taken. Employee interviews showed general complaints but nothing specifically related to an occupational disease. Samples taken in the BOF stock house and the BOF lime station showed concentrations of dust that exceeded the nuisance dust standard and the 1973 TLVs. Results may be reviewed in the Appendix.

C. Evaluation Methods

All dust and metal samples taken for this hazard evaluation determination were collected on pre-weighed filters and analyzed by the NIOSH Cincinnati laboratory personnel.

D. 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:

Substances	mg/M^3	ACGIH TLVs mg/M^3
Inert or Nuisance Dust:		
Total Dust	15	10
Iron	15	10
Magnesium	15	10
Calcium	15	10
Carbon	15	3.5

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

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.

E. Evaluation Results and Discussion

On September 5, 1973, a total of five personal samples were taken in the BOF, the BOF stock house, and the BOF lime station. Laboratory analysis of these samples showed that the only areas where employees were receiving significant exposures were in the BOF stock house and BOF lime station. Total nuisance dust in the BOF stock house was 26.2 mg/M^3, and in the BOF lime station the nuisance dust level was 49.94 mg/M^3. It is apparent from a walk-through survey, without taking an environmental personal sample, that a dust exists in the BOF stock house and in the BOF lime station. Therefore, additional sampling would only be repetitive and would always show concentrations far in excess of the Federal standards or the TLVs. Employees working in these areas did complain of eye irritation and general discomfort from the high dust levels.

F. Recommendations

1. Appropriate means should be taken to eliminate such high exposures of the personnel working in the BOF lime station from the excessive concentrations of lime dust.

2. Proper particulate type respirators should be provided to the personnel working in the BOF stock house to prevent excessive exposure to dust created by the handling of the scrap metals.

APPENDIX 1

WHEELING-PITTSBURGH STEEL CORPORATION
MINGO, OHIO

September 5, 1973

BOF, BOF Stock House, and BOF Lime Station

Worker	Job	Sample Volume liters	Sample Number	Total Dust mg/M^3	Iron (Fe) mg/M^3	Magnesium (Mg) mg/M^3	Calcium (Ca) mg/M^3	Carbon (C) mg/M^3
H.F.	Crane Operator	490	6 AA	26.20	0.13	-0-	-0-	-0-
J.K.	Furnace Man	416	16 SM	1.6	-0-	-0-	-0-	0.11
C.R.	Furnace Man	330	22 AA	2.1	-0-	-0-	-0-	0.07
--	--	--	10AA (blank)	0.1	0.006	-0-	-0-	-0-
--	--	--	18AA (blank)	0.2	-0-	-0-	-0-	*
B.W.	Furnace Man	394	7 AA	1.8	-0-	-0-	-0-	-0-
C.M.	Flux Operator	382	15 AA	49.94	-0-	2.93	26.35	-0-
	FEDERAL STANDARDS			15	15	15	15	15
	ACGIH TLVs			10	10	10	10	3.5

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

* There was a possibility of contamination; therefore, results were not reported.

All concentrations reported above were collected on workers except for samples 10AA and 18AA, which were blanks.

The magnesium and calcium lime was treated as a carbonate, since the lime had not been heated prior to sampling. Therefore, the nuisance dust standard was used for a reference in this hazard evaluation determination. All samples in this determination were analyzed for total dust, iron, magnesium, calcium, and carbon. These were the only contaminants present at the location.

V. AUTHORSHIP AND ACKNOWLEDGMENT

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