REPORT OF A PRELIMINARY SURVEY OF THE BRASS FOUNDRY OF THE SCHAIBLE COMPANY CINCINNATI, OHIO

From the Kettering Laboratory in the Department of Preventive Medicine and Industrial Health, College of Medicine, University of Cincinnati, Cincinnati, Ohio

Material: Air Samples

Source: Brass Foundry of The Schaible Company, 2620 Coo Cincinnati, Ohio

Method of Collection: Electrostatic precipitator, MSA carbon monoxide

Date of Collection: November 13, 1952

Required: Concentrations of lead, zinc and carbon monoxid dust counts

Results

Analysis Number	Location	Time of Sampling	Temperature at Location °F	Mgs. metal per cubic meter of air		Mil part cub o
				Lead	Zinc	
52A-7680	On charging platform between #8 and #9 furnaces	9:45 am	90	0.36	2.60	
	Between furnace platforms	9:55 am	-	-	-	
52A-7681	On charging platform between #5 and #6 furnaces	9:45 am	100	1.00	6.00	
52A-7682	While skimming (three ladles)	10:10 am	-	2.03	11.80	
52A-7683	On charging platform of Reda furnace	10:00 am	120	1.18	9.90	
52A-7684 (A)	While casting on #4 roller conveyor (up-wind from fume)	10:20 am	73	0.72	6.10	

Analysis Number	Location	Time of Sampling	Temperature at Location °F	Mgs. metal per cubic meter of air		Mil parti cubi of
				Lead	Zinc	
52A-7684 (B)	While casting on #4 roller conveyor (in path of fume from ladles)	10:25 am	73	2.54	40.80	
52A-7685	While casting on large power mold conveyor	10:15 am	74	0.67	6.45	
52A-7686	At shake-out on #4 roller conveyor	10:35 am	76	0.41	3.70	
52A-7687	At shake-out between the two power mold conveyors	10:30 am	76	0.40	3.34	
52A-7688	In area between molding machines #1 and #2	10:50 am	-	0.31	2.13	
52A-7689	In area near molding machine #16	10:50 am	71	0.065	0.26	
52A-7690	In grinding room near drinking fountain	11:20 am	80	0.145	0.88	
52A-7691	In core cleaning area in core room	11:05 am	-	0.100	0.75	
52A-7711	Dust removed from pipes in core room near molding area	-	-	0.63%	2.59%(a)	
52A-7712	Dust removed from rafter in center of casting area	-	-	0.62%	6.29%(b)	

(a) Crystalline silica = 50%

(b) Crystalline silica = 2

Analysis Number	Location	Time of Sampling	Temperature at Location °F
	Area in front of furnaces (pouring area)	11:30 am	-

Mgs. metal per cubic meter of air		Millions of particles per cubic meter of air	Carbon Monoxide (parts per million)
Lead	Zinc		
-	-	-	25

Remarks

1. Dust counts yielded fewer than 5 million particles per cubic foot at the core making, shake-out, molding, and grinding operations which were investigated on November 11. No samples were collected in the "Wheelabrator" area or in other areas where sands are processed for use. A situation involving 5 million particles per cubic foot of air is considered safe where dusts containing more than 75 per cent of free silica are being handled.

2. All concentrations of carbon monoxide determined during this cycle of operation were at or below the value of 100 p.p.m. considered satisfactory for regular industrial exposure of 8 hours duration per day.

3. The concentrations of lead in the atmosphere at all stations except in the core room and near molding machine #16 equaled or exceeded the concentration of 0.15 mg. per cubic meter of air which is generally considered to be the maximum concentration which should be permitted in workrooms in which men are employed regularly for 8 hours daily. Except for samples 7689, 7690 and 7691, the concentrations of lead in the atmosphere exceeded the generally accepted safe level by factors varying from 2.1 to 17. The conditions with respect to lead exposure, therefore, are hazardous, if men are exposed to them over sufficiently prolonged periods of time.

4. Only one result on zinc (sample 7684 B) exceeded the value of 15 mgs. per cubic meter of air which is generally accepted as satisfactory for industrial exposure.

5. The levels of lead or other contaminants found are representative only of one day's operations. The conditions which prevail generally and regularly could be appraised only by

repeated analyses of the atmosphere under a variety of operating conditions.

Recommendations

1. An engineering survey should be made to determine the best means for reducing the concentrations of the toxic materials in the atmosphere to safe levels. Such a survey would involve additional air sampling and analysis to determine the nature of the air entering the building, within the building, and discharged from the building. By reducing the amount of lead in the air to a safe level, safe conditions with reference to other toxic fumes and gases will also be provided.

2. Periodic determinations should be made of the levels of lead concentration in the urine and blood of all exposed persons. A medical program involving pre-employment and periodic examinations should be tied in with this sampling program. Such a program also would involve considerations concerning the proper use and type of personal protective devices, the improvement of housekeeping, the provision of an adequate locker room, wash room and eating room.

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Date: December 1, 1952