



AMERICAN SMELTING AND REFINING COMPANY
Department of Environmental Sciences
Salt Lake City, Utah

Plant: EL PASO

Survey Date: January 16-19, 1974

Field Work: John B. Richardson . Report Date: March 11, 1974

INDUSTRIAL HYGIENE SURVEY REPORT

I. OPERATING CONDITIONS:

Number 2 Blast Furnace was not in operation. Conditions were otherwise normal, including the usual curtailment of the Sinter Plant during the day shift to avoid violations of State SO₂ standards.

II. SAMPLING:

A. A.I.S.I. tape samplers were used in four areas to collect one-hour sequential samples of airborne dust and fume:

- 1) Cadmium Plant - Godfrey roaster
- 2) Cadmium Plant - Storage shed
- 3) Sinter Plant - Fire floor, feeder end
- 4) Blast Furrace - Between No. 1 and No. 2 Blast Furnaces

Samples collected in both the Sinter Plant and the Blast Furnace Department were analyzed for lead only. All Cadmium Plant samples were analyzed for both lead and cadmium by atomic absorption spectrophotometry.

B. Individual dust and fume samples were collected concurrently with Dr. Delmar D. Krehbiel, an Occupational Safety and Health Administration enforcement officer from the Lubbock, Texas district office. M.S.A. personal monitors equipped with Millipore filters were used: plastic casing intact and inlet plug removed.

A respirable dust and fume sample was collected using a M.S.A. personal monitor equipped with a cyclone device and a Millipore filter.

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- C. Asbestos samples were taken in the general warehouse, in a small storage shed, in the carpenter shop, and in the Blast Furnace area. A M.S.A. personal monitor and open-face Millipore filters were used.

III. SAMPLING RESULTS:

A. A.I.S.I. Tape Samplers:

Airborne lead and cadmium concentrations are listed as follows:

<u>Department</u>	<u>Location</u>	<u>Anal- ysis</u>	<u>Concentration (mg/m³)</u>			<u>No of Hourly Samples</u>	<u>Figure No.</u>
			<u>Mean</u>	<u>Max.</u>	<u>Min.</u>		
Cadmium	Godfrey Roaster	Cd	0.01	0.04	0.002	23	1
		Pb	0.05	0.15	0.001		2
	Storage Shed	Cd	0.13	0.87	0.004	23	3
		Pb	0.13	0.70	0.004		4
Lead	D & L Fire Floor	Pb	0.43*	1.13	0.07	25	5
	Blast Furnace	Pb	0.14	0.39	0.07	22	6

* Mean value exceeds OSHA 8-hour time-weighted average

OSHA Limits: Pb -- 0.20 mg/m³
Cd fume -- 0.1 mg/m³
Cd dust -- 0.2 mg/m³

B. Personal Monitors:

The M.S.A. personal monitor results for dust and fume of lead, cadmium and zinc are tabulated below:

<u>Department</u>	<u>Employee & No.</u>	<u>Job or Operation</u>	<u>Sampling</u>		<u>Anal- ysis</u>	<u>Conc'n. (mg/m³)</u>
			<u>1974 Date</u>	<u>Time (min.)</u>		
Lead-Dross	#60	#5 Kettleman	1/16	325	Pb	0.30 *
Lead-Blast	#168	920 Operator	1/16	327	Pb	0.20
Lead-D & L	#1035	D&L Fireman	1/16	315	Pb	0.47 *
Lead-D & L	#1106	D&L Fireman	1/16	318	Pb	0.45 *

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C. Asbestos sampling:

Asbestos sampling resulted in the following values:

<u>Department</u>	<u>Employee & No.</u>	<u>Job or Operation</u>	<u>Sampling</u>		<u>Conc'n based on sampling time</u> No. fibers >5 μ in length/cm ³ air	<u>8-hour time weighted conc'n</u>
			<u>1974 Date</u>	<u>Time (min.)</u>		
Warehouse	:	#5650 Cutting asbestos board	1/18	2	2.3	0.01
		#5650 Cutting asbestos cloth	1/18	2	2.3	0.01
Brickmason Crew		#1522 Mixing Insulag inside shed	1/18	4	4.7	0.04
Carpenter Shop		#5483 Cutting asbestos roll with band saw	1/19	13	22.2 +	0.60
Masonry		#861 Caulking 741 Blast Fce.	1/21	102	0.4	0.085
Carpenter Shop	R. Carey	---- Sawing transite	1/23	5	46.3 +	0.48

OSHA 8-hour, time-weighted standard = 5 fibers >5 μ in length/cm³ of air.

+ Exceeds OSHA ceiling concentration of 10 fibers >5 μ in length/cm³ of air, not to be exceeded at any time during an 8-hour shift.

IV. COMMENTS:

A. Cadmium Plant:

Although tape sampler results show low airborne lead and cadmium levels in this department, personal monitor values indicate otherwise. All three employees sampled showed excessive exposure to lead and cadmium. Although the crane operator's overall lead and cadmium exposure appears less than that of the other two cadmium workers sampled, he may actually experience much higher excursions during the time he loads the hopper.

Personnel in this department appeared to be firmly committed to respirator wearing.

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B. Zinc Plant:

The only employee sampled was in the kiln area. Both lead and zinc oxide fume exposures were in excess of the OSHA 8-hour standards.

Respirator-wearing appeared to be generally good.

C. Lead Plant:

With one exception all personal monitor results in this department exceeded the OSHA lead standard. The results of the sampler located in the Sinter Plant confirm this conclusion. The tape sampler located in the Blast Furnace area showed generally low levels of airborne lead, whereas the personal monitor results for the same area indicated that individual exposures are much greater.

Respirator-wearing appeared to be faithfully adhered to in the Lead Plant, except for occasional laxness in the Blast Furnace area.

D. Asbestos Sampling Results:

Of the six samples taken, two were in excess of the OSHA maximum allowable standard (Carpenter Shop). Eight-hour, time-weighted average concentrations for all samples were below the OSHA limit. In the cases of the Insulag mixing and asbestos roll cutting, respirators were worn during sampling.

Based on the OSHA 8-hour standard and the infrequency of the operation, asbestos sheet and cloth cutting in the warehouse constitutes a negligible health hazard. Insulag mixing and Blast Furnace caulking, also intermittent operations, would fall into a low-hazard category. Mixing would become even less of an exposure problem if the task were performed in the open air and not in a small enclosure.

Management has already given verbal assurance that the practice of cutting asbestos rolls with band saws and all similar operations which generate heavy dust concentrations will be promptly discontinued.

Transite sawing, if continued, requires engineering controls, such as local exhaust ventilation and dust collection systems, to attain compliance with the OSHA ceiling concentration standard. Compliance is not achieved by the use of respirators only. A copy of the OSHA asbestos standard is enclosed with this report.

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