AIR POLLUTION CONTROL DISTRICT
South San Pedro Street, Los Angeles 13, California—Madison 9-4711 / COUNTY OF LOS ANGELES

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18

SECONDARY ZINC SMELTING
AP-42 Section ~~7.14~~ 12.14
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Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

ENGINEERING DIVISION REPORT

ON

AIR CONTAMINANT EMISSIONS FROM METALLURGICAL OPERATIONS IN LOS ANGELES COUNTY

JULY 1961

BY

WILLIAM F. HAMMOND
SENIOR ENGINEER

AND

SAMFORD M. WEISS
[illegible]

Robert T. Chass

Robert C. Lunchs

ZINC GALVANIZING KETTLES

The stack test data shows that an average of 0.62 lbs. per hour of aerosol emission results from zinc galvanizing operations. The emissions are mainly due to the fluxes used and not the amount of metal processed.

The Survey showed that there were 19 kettles in the County, 5 of which were equipped with air pollution controls. The total zinc metal used was 560 tons per month.

Losses to the atmosphere as a result of 8 hours per day operation of the equipment is as follows:

$$\frac{0.62}{2,000} \times 8 \times 19 = 0.05 \text{ tons per day}$$

$= 100$ #/day

$= 5.3$ lb/ton of zinc.

$\frac{560}{30}$

20T/day of metal

0.6 5.3

.15 X

1.54

0.15

53
.15
265
53
.6 .795
1.3

1.54
5.3
462
770
.6 8.162
136

ZINC GALVANIZING KETTLE TEST DATA

NAME	DATE	EMISSIONS LBS/HR
Advance Galvanizing	9-10-59	0.15
Advance Galvanizing	9-14-59	1.54
Emsco	4-16-59	0.46
Emsco	4-16-59	0.69
L. A. Galvanizing	5-11-59	0.55
Superior Pacific	3-26-59	0.33
	AVERAGE	0.62

ZINC CALCINE PROCESSING KILNS

The emission factor for zinc calcine processing kilns was determined by a recent stack test. Only one kiln is located in the country; however, the emissions would be considerable if no air pollution control equipment were being used.

The emission factor for the kiln :

Without Control Equipment	88.8 lbs. per ton
With Control Equipment	1.0 lbs. per ton

Results of industry survey showed that 200 tons per month of material were processed in the one kiln.

Losses to the atmosphere if no air pollution control equipment were used:

$$\frac{88.8}{2,000} \times \frac{200}{22.5} = 0.4 \text{ tons per day}$$

Losses to the atmosphere using air pollution control equipment:

$$\frac{1.0}{2,000} \times \frac{200}{22.5} = 0.004 \text{ tons per day}$$

Amount prevented from going to the atmosphere:

$$0.4 - 0.004 = 0.4 \text{ tons per day}$$

ZINC CALCINE KILN TEST DATA

NAME	DATE	PROCESS WEIGHT LBS/HR	UNCONTROLLED LBS/HR	CONTROLLED LBS/HR	EMISSION FACTOR UNCONTROLLED LBS/TON	EMISSION FACTOR CONTROLLED LBS/TON
Pacific Smelting	1-31-61	2781	123.3	1.41	88.8	1.0

ZINC POT FURNACES

The emission factor for zinc pot furnaces was assumed to be the same as that calculated for lead pot furnaces. No specific tests have been run on zinc pot furnaces. Most of the zinc pot furnaces are used in conjunction with die casting operations and therefore the emissions are similar to lead pot furnaces.

Emission factors for the furnaces are as follows:

Without Control Equipment	0.1 lbs. per ton
With Control Equipment	0.01 lbs. per ton

Results of industry survey showed that 3518 tons per month of zinc were processed in 245 uncontrolled furnaces. A total of 195 tons per month were processed in 7 controlled furnaces.

Losses to the atmosphere if no air pollution control equipment at all were used:

$$\frac{60.1}{2,000} \times \frac{3713}{22.5} = 0.01 \text{ tons per day}$$

Losses to the atmosphere at the present state of air pollution control:

Losses from the uncontrolled furnaces:

$$\frac{0.1}{2,000} \times \frac{3518}{22.5} = 0.01 \text{ tons per day}$$

Losses from the controlled furnaces:

$$\frac{0.01}{2,000} \times \frac{195}{22.5} = \text{nil tons per day}$$

Total emissions to the atmosphere

0.01 tons per day

Amount prevented from going to the atmosphere:

nil tons per day

ZINC SWEATING FURNACES

The emission factor for zinc sweating furnaces was determined from a recent stack test. The equipment tested was equipped with hooding over the charging door as well as furnace stack ventilation to a baghouse. The emission factor therefore includes the emissions due to normal melting as well as the raking out of the dross.

Emission factor based on recovered zinc:

Without Control Equipment	10.8 lbs. per ton
With Control Equipment	0.4 lbs. per ton

The results of the industry survey showed that 1245 tons per month of zinc were recovered by sweating in eight furnaces. All the furnaces were equipped with air pollution control equipment.

Losses to atmosphere if no air pollution control equipment were used:

$$\frac{10.8}{2,000} \times \frac{1245}{22.5} = \quad 0.30 \text{ tons per day}$$

Losses to atmosphere using air pollution control equipment:

$$\frac{0.4}{2,000} \times \frac{1245}{22.5} = \quad 0.01 \text{ tons per day}$$

Amount prevented from going to the atmosphere:

$$0.30 - 0.01 = \quad 0.29 \text{ tons per day}$$

ZINC SWEATING FURNACE TEST DATA

NAME	DATE	ZINC METAL RECOVERED LBS/HR	BAGHOUSE INLET LBS/HR	BAGHOUSE OUTLET LBS/HR	UNCONTROLLED LBS/TON	CONTROLLED LBS/TON
Nonna Metals	3-24-60	2500	13.5	0.5	10.8	0.4