

at 300 N. 1st Street

2

Air Contaminant Emissions From Industrial
Operations in Los Angeles County

SECONDARY ALUMINUM
OPERATIONS
AP-42 Section 7.8
Reference Number
2

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.



AIR POLLUTION CONTROL DISTRICT

Robert T. Supply

434 South San Pedro Street, Los Angeles 13, California - Madison 9-4711 / COUNTY OF LOS ANGELES

18

Robert T.

1920-21

The report on the progress of the work of the Committee for the year 1920-21, is now being prepared and will be published in the near future.

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RESULTS

The data obtained from the various air pollution control devices installed at the various steel mills in the Los Angeles area are being collected by the pollution control equipment. The air pollution control devices have been installed primarily on the high temperature steel equipment such as direct and steel melting furnaces and gray iron cupolas.

It is significant to note that only 14% of all types of furnaces in Los Angeles County are equipped with controls which collect an estimated 46 tons per day of aerosols. The uncontrolled furnaces and the contaminants which escape collection by the control equipment allow 6 tons of aerosols to be released to the Los Angeles atmosphere daily. This is shown graphically in Figure 2.

The bar graph in Figure 2 shows the air pollution potential from each of the major classifications of steel melting equipment. Electric arc furnaces, if uncontrolled, would cause 21.7 tons per day of air pollution. However, as shown by Figure 2, the actual reduction is reduced to 2 tons per day by the use of the present control equipment. Further reductions will be realized following the completion of the bayhouse at Bethlehem Steel Company.

Tables I and II give the numerical quantities of aerosols being prevented from release to the Los Angeles atmosphere. The values were determined by means of the air quality and control data from the specific tests and methods outlined in Tables III and IV. The data for the specific tests and methods are shown in Table V.

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE

1. 2. 3.

The number of each type of furnace installed in each area has been included in Table IV of the data sheet. The number of furnaces operating in the various open control systems. The number of total which is included in the various types of furnaces is included and indicates the comparative magnitude of the operations. Although the list is not entirely complete, it includes all the major furnaces and most of the small operations.

TONS PER DAY

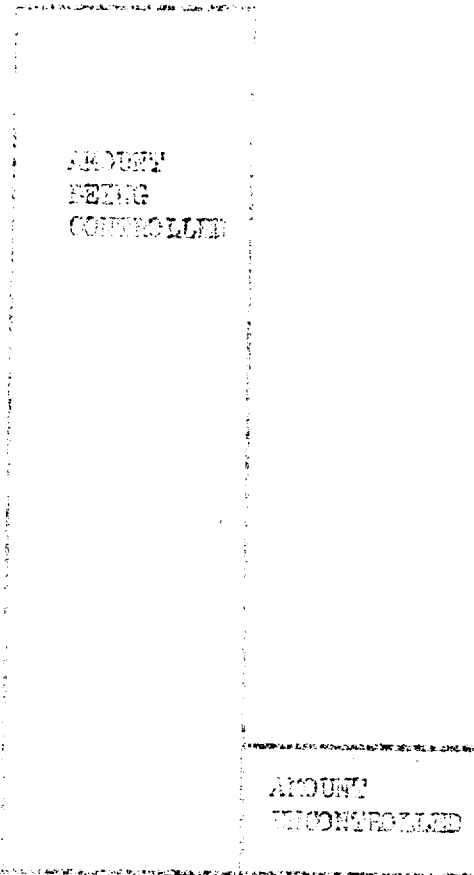
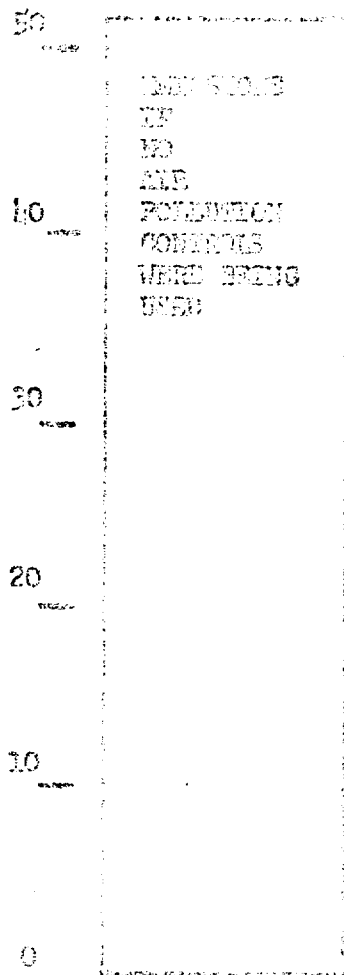


Figure 1. General Emissions From Pyrolysis

1000

1000

1000

1000

Aluminum Chlorination Stations
Aluminum, Crucible
Aluminum, Reverberatory
Aluminum, Seeding
Brass, Crucible
Brass, Electrode
Brass, Reverberatory
Brass, Rotary
Iron, Cupola
Iron, Electric Induction
Iron, Reverberatory
Lead, Cupola
Lead, Pot
Lead, Reverberatory
Magnesium, Pot
Steel, Arc
Steel, Induction
Steel, Open Hearth
Zinc, Galvanizing
Zinc, Kiln
Zinc, Pot
Zinc, Seeding

Figure 1. General Classification for Processes in Various States of the Republic.

1947-1948

Statement of the Department of the Interior

Department of the Interior

Statement of the Department of the Interior

Game Crops	1.00
Permit for Soil Fertilizing	3.00
Heat Electricity	1.00
Small Case Machines	0.00

Total

5.00

	Price	Weight
Aluminum, Castings	10.0	1.0
Aluminum, Sheet & Plate	10.0	1.0
Aluminum, Wire Rod	10.0	1.0
Copper, Castings	20.0	1.0
Copper, Electrolytic	20.0	1.0
Copper, Wire Rod	20.0	1.0
Iron, Castings	10.0	1.0
Iron, Electrolytic	10.0	1.0
Iron, Wire Rod	10.0	1.0
Lead, Castings	10.0	1.0
Lead, Electrolytic	10.0	1.0
Lead, Wire Rod	10.0	1.0
Nickel, Castings	10.0	1.0
Nickel, Electrolytic	10.0	1.0
Nickel, Wire Rod	10.0	1.0
Steel, Castings	10.0	1.0
Steel, Electrolytic	10.0	1.0
Steel, Wire Rod	10.0	1.0
Zinc, Castings	10.0	1.0
Zinc, Electrolytic	10.0	1.0
Zinc, Wire Rod	10.0	1.0

the 1990s, the number of people in the world who are illiterate has increased from 1.2 billion to 1.5 billion. The number of illiterate people in the world is projected to reach 1.7 billion by the year 2015. The number of illiterate people in the world is projected to reach 1.7 billion by the year 2015.

TABLE 1. - *Continued*

Item	Quantity	Unit	Value	Value
Standard, Indicator	(701)	21	1.14	100
Aluminum, Anode	1,074	10	2	100
Aluminum, Reverberatory	16,907	75	6	100
Aluminum, Casting	575	21	5	100
Brass, Castable	4,606	207	12	100
Brass, Electro	9,728	35	25	100
Brass, Remelted	728	7	5	100
Brass, Remelted	1,066	17	16	94
Iron, Castable	19,170	36	35	100
Iron, Electric Induction	1,138	9	1	11
Iron, Remelted	1,066	12	6	6
Lead, Castable	1,353	3	3	100
Lead, Pot	95,978	114	49	35
Lead, Remelted	1,716	13	13	100
Magnesium, Pot	705	91	6	6
Steel, Cast	68,095	50	50	100
Steel, Induction	590	11	7	17
Steel, Open Hearth	13,600	1	1	100
Steel, Remelted	356	19	5	27
Zinc, Cast	200	1	1	100
Zinc, Pot	1,711	172	7	100
Zinc, Remelted	1,311	3	1	100
Zinc, Pot	1,311	3	1	100

Note: This does not categorically identify the emissions reported here as being from Aluminum recovery operations only, as not applicable to Aluminum melting for castings production. AAM

The following figures are for the aluminum recovery operations only. The emissions from the aluminum melting for castings production are not included in this report. The emissions from the aluminum recovery operations are listed in the following table.

Table 1. Emissions from aluminum recovery operations.

Without control equipment	1500 lbs. per ton of dross
With control equipment	50 lbs. per ton of dross

The results of the analysis were that 31 tons per month of dross were used in 12 aluminum drossing stations. All 12 stations tended to air pollution control equipment.

Based on average 1.7 tons of pollution equipment at all time used:

1500 lb	50 tons	0.57	tons per day
5000 lb	100 tons		

Based on average of the present state of air pollution control:

Lesser than the controlled stations

50	50	0.03	tons per day
2500	1000		

Amount of dross going to everywhere

0.57 + 0.03	0.60	tons per day
-------------	------	--------------

THE

DATE	TIME	LOCATION	WIND DIRECTION	WIND SPEED	WAVE HEIGHT	WAVE PERIOD	SEA STATE	WATER TEMPERATURE	AIR TEMPERATURE	RELATIVE HUMIDITY	VISIBILITY	WEATHER	REMARKS
10/10/77	0600	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	0700	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	0800	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	0900	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	1000	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	1100	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	1200	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	1300	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	1400	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	1500	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	1600	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	1700	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	1800	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	1900	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	2000	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	2100	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	2200	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	
10/10/77	2300	05/10/77	050	10	1.5	8	1	20.0	20.0	85	10	Partly Cloudy	

[illegible]

1. *Phragmites australis* (Cav.) Trin. ex Steud.

ALUMINUM MELTING CRUCIBLE FURNACES

The emission factor for electric induction crucible furnaces was determined by averaging the two available tests. Another furnace was equipped with an air pollution control device. The emission factor is identical to the one reported in the previous total pollution survey. For the purpose of the survey the emissions from electric induction furnaces are assumed to be the same as the crucible type and are included in data below.

Aluminum melting crucible furnaces are seldom fitted to air pollution control equipment except when considerable reclaiming or refining operations are being conducted. However, by applying a 90% efficiency factor for an effective air pollution control device the control emission factor can be calculated.

Emission factors for the furnaces are as follows:

Without control equipment	1.9 lbs. per ton
With control equipment	0.2 lbs. per ton

Results of the industry survey showed that 4282 tons per month of aluminum were processed in 684 furnaces during 1963.

Losses to the atmosphere were:

$$\frac{1.9}{2000} \times \frac{4282}{22.5} = 0.13 \quad \text{tons per day}$$

ALUMINUM CRUCIBLE FURNACE TEST DATA

Item	Test No.	Date	Process Weight Lbs/Hr	Emissions, Lbs/Hr	Dec/Sec
Normal	687	4-11-52	125	$(.181 \pm \frac{.181}{5}) = 0.22$	1.4
Normal	---	2-9-48	103	0.07	0.2
AVERAGE					1.9

The above data are for the period 1961-1962. The average daily concentration of suspended particulates in the air during this period was 1.2 mg/m³. The average daily concentration of suspended particulates in the air during this period was 1.2 mg/m³. The average daily concentration of suspended particulates in the air during this period was 1.2 mg/m³.

Emission factor based on material burnt:

Without control equipment

1.2 mg/m³

With control equipment

1.2 mg/m³

The results of the laboratory tests showed that 1.2 mg/m³ of suspended particulates were present in the atmosphere. The results of the laboratory tests showed that 1.2 mg/m³ of suspended particulates were present in the atmosphere. The results of the laboratory tests showed that 1.2 mg/m³ of suspended particulates were present in the atmosphere.

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

$$\frac{1.2}{2000} \times \frac{16,387}{22.5} = 1.57 \text{ tons per day}$$

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

Losses from the uncontrolled furnaces

$$\frac{1.2}{2000} \times \frac{14,727}{22.5} = 1.36 \text{ tons per day}$$

Losses from the controlled furnaces

$$\frac{1.2}{2000} \times \frac{2186}{22.5} = 0.16 \text{ tons per day}$$

Actual losses to atmosphere

$$1.36 + 0.16 = 1.52 \text{ tons per day}$$

Actual losses to atmosphere

$$1.36 + 0.16 = 1.52 \text{ tons per day}$$

Abstract—The purpose of this study was to determine if there were differences in the prevalence of musculoskeletal disorders among different types of workers. The subjects included all employees of a large manufacturing company who had been employed at least one year. A questionnaire was mailed to each employee asking about symptoms of musculoskeletal disorders and work-related factors. The response rate was 70%. The results showed that the prevalence of musculoskeletal disorders was higher among non-manual workers than manual workers. The prevalence of musculoskeletal disorders was also higher among female workers than male workers. The prevalence of musculoskeletal disorders was higher among workers who reported working longer hours than those who reported working shorter hours. The prevalence of musculoskeletal disorders was higher among workers who reported working in noisy environments than those who reported working in quiet environments. The prevalence of musculoskeletal disorders was higher among workers who reported working in hot environments than those who reported working in cool environments. The prevalence of musculoskeletal disorders was higher among workers who reported working in cold environments than those who reported working in warm environments. The prevalence of musculoskeletal disorders was higher among workers who reported working in poorly lit environments than those who reported working in well-lit environments. The prevalence of musculoskeletal disorders was higher among workers who reported working in poorly ventilated environments than those who reported working in well-ventilated environments. The prevalence of musculoskeletal disorders was higher among workers who reported working in poorly maintained environments than those who reported working in well-maintained environments.

SECRET//NOFORN

DATE	TEST NAME	METAL, METAL, BEARING	NET WT. TO 0.01 GR	UNCONTROLLED LOSS LBS/HR	CONTROL DEVICE	CONTROLLED LOSS LBS/HR	UNCONTROLLED LOSS LBS/HR	CONTROLLED LOSS LBS/HR
0-327	0/15/50	3000	1.150	0.87	---	---	---	---
0-329	0/20/50	3000	0.811	0.23	---	---	---	---
---	10/13/50	2200	1.110	0.850	---	---	---	---
0-312	0/14/50	1020	0.835	6.27	Rejection	0.001	---	---
0-313	0/15/50	1010	0.82	6.60	---	---	---	---
0-314	0/16/50	2730	1.330	6.62	---	---	---	---
0-317	0/23/50	2560	1.28	6.0	Precipitate	0.001	---	---
0-318	12/13/50	3700	1.05	7.1	Precipitate	0.0	---	---
0-319	12/11/50	3700	1.85	10.0	Precipitate	1.7	---	---

Average 7.067

1. The first step is to determine the total number of items in the sample.

For example, if the sample size is 100, then:

$$\frac{100}{100} = 1.00$$

2. The second step is to determine the number of items in the population.

$$\frac{100}{100} = 1.00$$

3. The third step is to determine the number of items in the sample.

$$\frac{100}{100} = 1.00$$

4. The fourth step is to determine the number of items in the population.

$$\frac{100}{100} = 1.00$$

1. $\frac{10.5 + 12.5}{2} = 11.5$

11.5 is the average

2. $\frac{10.5 + 12.5}{2} = 11.5$

$$\frac{10.5 + 12.5}{2} = 11.5$$

3. $\frac{10.5 + 12.5}{2} = 11.5$

$$\frac{10.5 + 12.5}{2} = 11.5$$

4. $\frac{10.5 + 12.5}{2} = 11.5$

$$\frac{10.5 + 12.5}{2} = 11.5$$

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED

DATE 10/15/03 BY 6032

EXEMPT FROM GDS

DATE 10/15/03 BY 6032

EXEMPT FROM GDS

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DATE 10/15/03 BY 6032

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Chicago, Ill. 60610

THE UNIVERSITY OF CHICAGO PRESS

1. The first of these is the fact that

the number of people who are employed in the service of the State is increasing at a rapid rate, and this is due to the fact that the State is becoming more and more dependent on the services of the people.

2. The second of these is the fact that the number of people who are employed in the service of the State is increasing at a rapid rate, and this is due to the fact that the State is becoming more and more dependent on the services of the people.

STATE OF NEW YORK

NAME	DATE	AMOUNT	REMARKS
WEISER CO.	5/21/57	25.00	
WEISER CO.	5/25/58	25.00	
WEISER CO.	12/10/59	25.00	

AMOUNT \$ 75.00

DATE 5/25/58

Table 1. Summary of Data

Year	Area (ha)	Yield (kg/ha)	Quality (kg/ha)	Cost (USD/ha)	Profit (USD/ha)
1990	1000	1000	1000	1000	1000
1991	1000	1000	1000	1000	1000
1992	1000	1000	1000	1000	1000
1993	1000	1000	1000	1000	1000
1994	1000	1000	1000	1000	1000
1995	1000	1000	1000	1000	1000
1996	1000	1000	1000	1000	1000
1997	1000	1000	1000	1000	1000
1998	1000	1000	1000	1000	1000
1999	1000	1000	1000	1000	1000
2000	1000	1000	1000	1000	1000
2001	1000	1000	1000	1000	1000
2002	1000	1000	1000	1000	1000
2003	1000	1000	1000	1000	1000
2004	1000	1000	1000	1000	1000
2005	1000	1000	1000	1000	1000
2006	1000	1000	1000	1000	1000
2007	1000	1000	1000	1000	1000
2008	1000	1000	1000	1000	1000
2009	1000	1000	1000	1000	1000
2010	1000	1000	1000	1000	1000
2011	1000	1000	1000	1000	1000
2012	1000	1000	1000	1000	1000
2013	1000	1000	1000	1000	1000
2014	1000	1000	1000	1000	1000
2015	1000	1000	1000	1000	1000
2016	1000	1000	1000	1000	1000
2017	1000	1000	1000	1000	1000
2018	1000	1000	1000	1000	1000
2019	1000	1000	1000	1000	1000
2020	1000	1000	1000	1000	1000

2.12. SUMMARY OF AIR EMISSIONS

The emission factor for each type of available furnace has been determined by using stack test data and installing the factors for the pending the actual results. The reliability of the data have been ascertained in several places. The individual emission factors have been adjusted to compensate for air emissions which entered outside the sampling loop.

Emission factors for available furnaces are as follows:

Without control Equipment	<u>3.9 lbs per ton</u>
With Control Equipment	0.7 lbs per ton

Results of the industry survey showed that 4616 tons per month of brass were processed in 887 available furnaces. 4613 tons were processed in 195 uncontrolled furnaces and 156 tons were processed in 12 controlled furnaces.

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

$$\frac{3.9}{2000} \times \frac{4616}{24} = 0.40 \text{ tons per day.}$$

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

Losses from control furnaces

$$\frac{0.7}{2000} \times \frac{105}{24} = 0.012 \text{ tons per day}$$

Losses due to the uncontrolled furnaces

$$\frac{3.9}{2000} \times \frac{4460}{24} = 0.39 \text{ tons per day}$$

Total losses to the atmosphere

$$0.40 + 0.012 = 0.412 \text{ tons per day}$$

Amount of brass supplied to the plant

$$4616 \text{ tons} \div 24 = 192 \text{ tons per day}$$

BRASS MELTING CRUCIBLE FURNACE TEST DATA

NAME	DATE	TEST NO	METAL WEIGHT LBS/HR	METAL WEIGHT TONS/HR	LOSS LBS/HR	% CAPTURE	APPROXIMATE EMISSION FACTOR LBS/TON
Grayson Controls	5/27/58	C-523	116	0.073	0.07	100	6.5
Grayson Controls	7/10/62	C-812(a)	373	0.107	0.241	80	1.2
Grayson Controls	7/10/62	C-812(b)	373	0.187	0.355	80	1.2
Grayson Controls	8/11/62	C-812(c)	536	0.269	0.178	100	0.7
Grayson Controls	8/11/62	C-812(d)	536	0.269	0.216	100	0.8
Grayson Controls	8/11/62	C-812(e)	450	0.225	0.207	80	1.2
Grayson Controls	8/11/62	C-812(f)	450	0.225	0.445	100	2.0
Grayson Controls	12/13/54	C-150	236	0.118	0.03	100	0.7
Grayson Controls	6/13/56	C-530	273	0.137	0.51	100	2.7
Grayson Controls	10/2/57	C-407	108	0.050	0.05	100	1.0
Grayson Controls	3/1/54	C-73	473	0.239	0.822	100	2.7
Grayson Controls	3/10/54	C-71	226	0.113	0.181	100	1.2
Grayson Controls	3/10/54	C-412	340	0.170	0.93	100	1.2
Grayson Controls	3/25/59	C-411	308	0.124	2.45	100	1.2
Grayson Controls	3/12/55	C-151	150	0.075	0.29	100	1.2
Grayson Controls	5/16/49		462	0.231	0.75	100	1.2
Grayson Controls	11/21/49		675	0.328	0.636	100	1.2
Grayson Controls	3/17/49		260	0.130	0.48	100	1.2
Average							3.7

(a) Assumed to be 100%
 (b) (c) Emission Factor = apparent emission factor / 100% capture

6. Control of Air Pollution

The main objective of the study was to determine the effect of the type of the furnace on the amount of air pollution. The study was conducted in the laboratory of the Department of Environmental Engineering, Faculty of Engineering, University of Baghdad. The study was conducted in the laboratory of the Department of Environmental Engineering, Faculty of Engineering, University of Baghdad.

The main objective of the study was to determine the effect of the

With control equipment

2000 tons per day

With control equipment

2000 tons per day

The results of the laboratory experiments of the furnace were presented in 15 electric furnaces during 1985-1987. The results were presented in 15 electric furnaces during 1985-1987. The results were presented in 15 electric furnaces during 1985-1987. The results were presented in 15 electric furnaces during 1985-1987.

Losses to the atmosphere in air pollution control costs are calculated

$$\frac{2.6}{2000} = \frac{5181}{2000} = 0.00259 \text{ tons per day}$$

Losses to the atmosphere in air pollution control costs are calculated

Losses to the atmosphere in air pollution control costs are calculated

$$\frac{2.6}{2000} = \frac{5181}{2000} = 0.00259 \text{ tons per day}$$

Losses to the atmosphere in air pollution control costs are calculated

$$\frac{2.6}{2000} = \frac{5181}{2000} = 0.00259 \text{ tons per day}$$

Losses to the atmosphere in air pollution control costs are calculated

$$0.00259 \times 365 = 0.945 \text{ tons per year}$$

Losses to the atmosphere in air pollution control costs are calculated

$$0.945 \times 100 = 94.5 \text{ tons per year}$$

•

LOSS DATA INVESTIGATORY FURNACE LOSS DATA

DATE	INITIAL WT. LBS/LB	UNCONTROLLED LOSS, LBS/HR	CONTROLLED LOSS, LBS/HR	LOSS
2/25/60	1000	25.1		25.1
4/23/60	1000	15.6		15.6
8/2/60	1000	20.2		20.2
7/5/60	600	3.69		3.69

LOSS DATA

Standard Deviation: 0.0000

Loss = 0.0000 + 0.0000 Loss

Loss = 0.0000 + 0.0000 Loss, Per Ton

Loss = 0.0000 + 0.0000 Loss, Per Ton

Loss = 0.0000 + 0.0000 Loss, Per Ton

Loss = 0.0000 + 0.0000 Loss, Per Ton

1. The first part of the report is a

summary of the work done during the year. It is a brief statement of the progress made in the various branches of the work, and of the results obtained. It is a statement of the work done, and not of the work to be done. It is a statement of the work done, and not of the work to be done.

2. The second part of the report is a

statement of the work done

in the various branches of the work

in the various branches of the work

in the various branches of the work

The third part of the report is a statement of the work done in the various branches of the work. It is a statement of the work done, and not of the work to be done. It is a statement of the work done, and not of the work to be done.

4. The fourth part of the report is a statement of the work done

in the various branches of the work

in the various branches of the work

in the various branches of the work

in the various branches of the work

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in the various branches of the work

in the various branches of the work

in the various branches of the work

TABLE 1.1 - SUMMARY OF DATA

LOCATION	DATE	WATER TEMPERATURE (°F)	WIND SPEED (MPH)	WIND DIRECTION
Upper Basin	10/15/77	105	10	110
Upper Basin	10/16/77	102	100	110
Lower Basin	10/17/77	100	10	110
Valley Basin	10/18/77	105	100	110
Average				10.5

TABLE 1.2 - SUMMARY OF DATA

Upper Basin Surface Temperature

10/15/77 = 105°F

10/16/77 = 102°F = 20.9 lbs/ton

Lower Basin Surface Temperature

10/17/77 = 100°F

10/18/77 = 105°F = 1.5 lbs/ton

IRON MELTING CUPOLA EMISSIONS

The emission factor for gray iron cupola furnaces has been determined by including estimated losses from the charging doorway and metal pouring losses along with the usual losses generated during the melting operation. Source test data were used to calculate the emission factor.

Emission factor for cupolas are as follows:

Without control equipment:

aerosols 17.4 lbs. per ton
carbon monoxide 24.7 lbs. per ton

With control equipment:

aerosols 2.7 lbs. per ton
carbon monoxide 7.7 lbs. per ton

Results of the industry survey showed that 19,170 tons per month of iron were processed in 36 gray iron cupolas during 1963.

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

$$\text{aerosols} \quad \frac{17.4}{2000} \times \frac{19,170}{22.5} = 7.4 \text{ tons per day}$$

$$\text{carbon monoxide} \quad \frac{24.7}{2000} \times \frac{19,170}{22.5} = 10.5 \text{ tons per day}$$

Losses to atmosphere using air pollution control equipment:

$$\text{aerosols} \quad \frac{2.7}{2000} \times \frac{19,170}{22.5} = 1.15 \text{ tons per day}$$

$$\text{carbon monoxide} \quad \frac{7.7}{2000} \times \frac{19,170}{22.5} = 3.3 \text{ tons per day}$$

Amount prevented from going to the atmosphere:

$$\text{aerosols} \quad 7.4 - 1.2 = 6.2 \text{ tons per day}$$

$$\text{carbon monoxide} \quad 10.6 - 3.3 = 7.3 \text{ tons per day}$$

CUMULATIVE CARBON MONOXIDE TEST DATA

TEST NO.	TIME (min)	EXHAUST VOLUME (cc)	VOLUME CO (cc)	WEIGHT CO (gms)	CO CONCENTRATION (%)
1	1/30/50	2,230	12.8	14.6	1.1
2	2/30/50	2,400	12.9	27.6	1.1
3	3/30/50	2,230	13.2	41.7	1.1
4	4/30/50	17,000	0.2	2.20	1.1
5	5/30/50	20,300	0.2	3.50	1.1
6	10/30/50	17,700	0.08	0.52	1.1
7	3/30/50	11,000	0.02	0.16	1.1
8	5/30/50	11,000	1.8	14.6	1.1
TOTAL					1.1

Weight Calculation

$$2000 \times 0.10 \times 28 = 5600$$

$$5600 \div 16.6 = 337.34$$

GRAY IRON POURING EMISSION DATA

DATE	TEST DATE	METAL POURED LBS/HR	DUST & FUMES LBS/HR	EMISSION FACTOR LBS/TON
Richard Hipo Co.	5-21-64	6887	5.0	1.45

INDUSTRY - AIR POLLUTION CONTROL

Electric industries from melting industries are the primary source of air pollution in County as replacements for the smelter from copper and also as replacements for reverberatory type furnaces. Stack tests have not been conducted on this specific operation; however, the emissions will vary depending upon the degree of contamination of the material charged. It is estimated that the emission factor is the same as that determined for the smelter reverberatory furnaces, which is 2.0 pounds per ton. It is estimated that control equipment would reduce the emission factor to 1.6 lbs/ton. Results of the industry survey showed that a total of 1418 tons worth of metal were processed in 9 furnaces. 1313 tons were processed in 8 uncontrolled and 105 tons were processed in 1 controlled furnace.

Losses to the atmosphere if no air pollution controls were used:

$$\frac{2.0}{2000} \times \frac{1418}{22.5} = 0.66 \text{ tons per day}$$

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

Losses from controlled furnace:

$$\frac{1.6}{2000} \times \frac{105}{22.5} = 0.032 \text{ tons/day}$$

Losses from the uncontrolled furnaces:

$$\frac{2.0}{2000} \times \frac{1313}{22.5} = 0.6 \text{ tons per day}$$

Total losses to atmosphere:

$$0.032 + 0.6 = 0.632 \text{ tons per day}$$

IRON MELTING FURNACE EMISSIONS CALCULATED

This type of furnace is used to a limited extent in Los Angeles County in the smaller iron foundries. The average emission factor has previously been reported as 0.5 lbs. per ton and no new furnace tests have been performed since that time. However pouring losses have been determined from test to add 1.5 lbs/ton to the emission. The uncontrolled emission factor is then: $1.5 + 0.5 = 2.0 \text{ lbs/ton}$.

It is estimated that control equipment would reduce the furnace emission from 0.5 to 0.1. The controlled emission factor is therefore:

$$\begin{aligned} 0.1 + \text{pouring loss} &= \\ 0.1 + 1.5 &= 1.6 \text{ lbs/ton} \end{aligned}$$

Results of the industry survey showed that a total of 1043 tons per month of metal were melted in 12 uncontrolled furnaces.

Losses to the atmosphere as a result of the operation of the furnaces:

$$\frac{2.0}{2000} \times \frac{1043}{22.5} = 0.05 \text{ tons per day}$$

11-11-63

Two engines on board the lead engine driven tank car (No. 1) which took. Exhaust gases were being processed which resulted in sulfur compound emissions in addition to the aerosols.

Emission factors for engines are as follows:

Without Control Equipment: aerosols 3.8 lbs. per ton
Sulfur compounds 43.6 lbs. per ton
With Control Equipment: aerosols 5.1 lbs. per ton
Sulfur compounds 51.5 lbs. per ton

Results of the industry survey showed that 1353 tons per month of lead were reclaimed in three cycles during 1963.

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

$$\text{Aerosols } \frac{300}{2,000} \times \frac{1353}{22.5} = 9.02 \text{ tons per day}$$

$$\text{Sulfur compounds } \frac{63.6}{2000} \times \frac{1353}{22.5} = 1.92 \text{ tons per day}$$

Losses to the atmosphere using air pollution control equipment:

$$\text{Aerosols } \frac{5.1}{2,000} \times \frac{1353}{22.5} = 0.35 \text{ tons per day}$$

$$\text{Sulfur compounds } \frac{51.5}{2,000} \times \frac{1353}{22.5} = 3.73 \text{ tons per day}$$

Amount prevented from going to the atmosphere:

$$\text{Aerosols } 9.02 - 0.35 = 8.67 \text{ tons per day}$$

$$\text{Sulfur compounds } 1.92 - 3.73 = 0.19 \text{ tons per day}$$

LAND RECLAIMING CUPOLA FURNACE TEST DATA

TIME	WASH	TOTAL RECOVERED YES/HR	UNCONTROLLED EMISSIONS		CONTROLLED EMISSIONS	
			ALUMINA TBS/HR .. TBS/TON	CULFUR COMPOUNDS TBS/HR .. TBS/TON	AMMONIA TBS/HR .. TBS/TON	HYDRO CARBONS TBS/HR .. TBS/TON
1530	64.01	1530	229	16.5	3.9	1.1
			300	63.8		

Total recovered from emissions of this type averages 67% %
of the land burning material charged.

EMISSION FACTOR FOR LEAD POT FURNACES

The emission factor for lead pot furnaces are determined by using the most available tests. Leister Furnace was equipped with an air pollution control device.

Lead pot furnaces are not wanted to air pollution control equipment except when reclaiming or refining operations are being conducted. Stack analyzer test data are not available for controlled lead pot furnaces; however, by applying a 90% efficiency factor for an effective air pollution control device, the control emission factor can be determined.

Emissions factors for the furnaces are as follows:

Without Control Equipment	<u>0.1 lbs. per ton</u>
With Control Equipment	0.01 lbs. per ton

Results of the industry survey show that 55,976 tons per month of lead were processed in 95 uncontrolled furnaces during 1963. A total of 8,949 tons per month of lead were processed in 49 furnaces equipped with air pollution controls.

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

$$\frac{0.1}{2,000} \times \frac{64,927}{22.5} = 0.11 \text{ tons per day}$$

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

Losses from the controlled furnaces

$$\frac{0.01}{2,000} \times \frac{8,949}{22.5} = 0.002 \text{ tons per day}$$

Losses due to the uncontrolled furnaces

$$\frac{0.1}{2,000} \times \frac{55,976}{22.5} = 0.12 \text{ tons per day}$$

Total emissions to the atmosphere:

$$0.12 + 0.002 = 0.12 \text{ tons per day}$$

Amount prevented from going to atmosphere:

$$0.11 - 0.12 = 0.01 \text{ tons per day}$$

TABLE OF RESULTS OF DATA

TEST NO.	TEST ID.	TEST DATE	TEST TIME (HRS)	TEST TIME (MIN)	TEST TIME (SEC)
1	Smith Energy	11-21-61	12,740	0.532	0.00
2	Smith Energy	11-21-61	9,122	0.532	0.10
APPROXIMATE AVERAGE					0.1

1. $\frac{151}{2,000} \times \frac{2704}{12.5} = 3.16$ tons per day

2. $\frac{261}{2,000} \times \frac{2704}{12.5} = 2.80$ tons per day
The above calculations are based on the assumption that the lead and sulfur compounds are being produced from the lead and sulfur compounds in the waste to the furnace.

3. $\frac{151}{2,000} \times \frac{2704}{12.5} = 3.16$ tons per day

4. $\frac{261}{2,000} \times \frac{2704}{12.5} = 2.80$ tons per day

5. $\frac{151}{2,000} \times \frac{2704}{12.5} = 3.16$ tons per day

6. $\frac{261}{2,000} \times \frac{2704}{12.5} = 2.80$ tons per day

7. $\frac{151}{2,000} \times \frac{2704}{12.5} = 3.16$ tons per day

Results of the industry survey showed that 3.16 tons per month of lead were processed in 13 furnaces during 1963. Of this total, 3.16 tons were released from battery processing furnaces.

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

$$\text{Arsenic} \frac{151}{2,000} \times \frac{2704}{12.5} = 3.16 \text{ tons per day}$$

$$\text{Sulfur compounds} \frac{261}{2,000} \times \frac{2704}{12.5} = 2.80 \text{ tons per day}$$

Released to the atmosphere using air pollution control equipment:

$$\text{Arsenic} \frac{151}{2,000} \times \frac{2704}{12.5} = 3.16 \text{ tons per day}$$

$$\text{Sulfur compounds} \frac{261}{2,000} \times \frac{2704}{12.5} = 2.80 \text{ tons per day}$$

Amount of lead and sulfur compounds released:

$$\text{Arsenic} = 3.16 \times 12.5 = 39.5 \text{ tons per day}$$

$$\text{Sulfur compounds} = 2.80 \times 12.5 = 35.0 \text{ tons per day}$$

LOSSES FROM THE FURNACES

Approximate gross loss of lead in smelting is determined for the Los Angeles location using one figure as a guide for other large cities, and the remaining figures are anget and their number, away to approximate drawings. Lead's indicates losses average 0.2 pound per hour from the furnaces but, due to the relatively small process weight of about 100 pounds per hour, the emission factor, based on pounds per ton, is 4.4.

Air pollution control equipment is not used on the furnaces and losses to the Los Angeles atmosphere are based on the uncontrolled emission factor.

Results of the industry survey showed a total of 705 tons per month of magnesium were processed in 91 furnaces.

Losses to the atmosphere as a result of the operation of the furnaces:

$$\frac{4.4}{2000} \times \frac{705}{22.5} = 0.07 \text{ tons per day.}$$

MAGNESIUM MELTING FURNACE TEST DATA

ITEM	TEST NO.	DATE	METAL WEIGHT LBS/HR	UNCONTROLLED LOSS, LBS/HR	UNCONTROLLED LOSS, LBS/HR
9% Alloy Prod. Osbrink H G S Metal	C-601	4/11/59	67.	0.26	0.0
	607	4/10/52	100	0.115	0.0
	C-532	7/9/58	125	0.18	0.0

Average 0.18

EMISSION FACTORS FOR ELECTRIC ARC FURNACES

The emission factor for electric arc furnaces is determined by multiplying the factor of air charging and tapping losses during the melting phase of operation. Recent tests have been employed to calculate the emission factor.

The test data accumulated by A.L. Little Company showed that losses of 6.0 lbs. per ton of metal charged were due to furnace charging and tapping alone. This amount was added to the average values obtained from tests of air pollution control systems to give the overall emission factor.

Emission factor for furnaces are as follows:

Without Control Equipment	15.0 lbs. per ton
With Control Equipment	1.4 lbs. per ton

Results of the industry survey showed that 65,000 tons per month of steel were processed in 50 electric arc furnaces in Los Angeles County during 1963.

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

$$\frac{15}{2,000} \times \frac{65,000}{22.5} = 21.7 \text{ tons per day.}$$

Losses to atmosphere using air pollution control equipment:

$$\frac{1.4}{2,000} \times \frac{65,000}{22.5} = 2.0 \text{ tons per day.}$$

Amount prevented from going to the atmosphere:

$$19.7 \text{ tons per day for difference.}$$

DUCT AND STEEL MELTING FURNACE TEST DATA

CHARGE TONE	FURNACE SIZE TONE	TOTAL MELTED LBS/HR	FUMES CAPTURED BY HOODS LBS/TON	FUMES RELEASED BY COLLECTOR LBS/TON	FUMES ESCAPING DUE TO CHANGING & TAPING LBS/TON	TOTAL FUMES WITHOUT CONTAINER LBS/TON	AVERAGE FUMES WITH CONTAINER LBS/TON
17	17	15,700	24.4	0.15	0.8	25.2	1.07
18	18	16,250	14.4	0.27	0.8	25.2	1.07
19	19	6,500	10.4	0.19	0.8	11.2	0.46
20	20	17,610	6.7	0.19	0.8	7.6	0.31
21	21	22,300	15.0	1.55	0.8	17.3	0.71
22	22	22,000	14.5	1.00	0.8	15.3	0.63
AVERAGE EMISSIONS							1.0

100

LOSSES DURING THE MELTING PROCESS

Production plant melting furnaces are used for the melting of metal. Alloy losses and other waste materials are charged to the furnaces to avoid contamination. These losses occur only for a few minutes during the heating cycle. The average emission factor is estimated to be 0.1 lbs. per ton of refined metal.

Results of the inventory survey showed a total of 590 tons per month of metal were processed in 21 furnaces.

Losses to atmosphere as a result of the operation of the furnaces:

$$\frac{0.1}{2,000} \times \frac{590}{22.5} = 0.002 \text{ tons per day}$$

1	0.00	0.00	0.00
2	0.00	0.00	0.00
3	0.00	0.00	0.00
4	0.05	0.00	0.00
5	0.05	0.00	0.00
6	0.05	0.00	0.00
7	0.05	0.00	0.00
8	0.05	0.00	0.00
9	0.05	0.00	0.00
10	0.05	0.00	0.00
11	0.05	0.00	0.00
12	0.45	45.1	5.270
13	0.45	101.5	5.390
14	0.45	63.1	5.800
15	0.45	177.0	2.300
16	0.45	123.0	3.400
17	0.45	73.1	2.300
18	0.45	73.1	3.670
19	0.45	0.00	1.000
20	0.45	0.00	0.00
21	0.45	0.00	0.00
22	0.45	0.00	0.00
23	0.45	0.00	0.00
24	0.45	0.00	0.00
25	0.45	0.00	0.00
26	0.45	0.00	0.00
27	0.45	0.00	0.00
28	0.45	0.00	0.00
29	0.45	0.00	0.00
30	0.45	0.00	0.00
31	0.45	0.00	0.00
32	0.45	0.00	0.00
33	0.45	0.00	0.00
34	0.45	0.00	0.00
35	0.45	0.00	0.00
36	0.45	0.00	0.00
37	0.45	0.00	0.00
38	0.45	0.00	0.00
39	0.45	0.00	0.00
40	0.45	0.00	0.00
41	0.45	0.00	0.00
42	0.45	0.00	0.00
43	0.45	0.00	0.00
44	0.45	0.00	0.00
45	0.45	0.00	0.00
46	0.45	0.00	0.00
47	0.45	0.00	0.00
48	0.45	0.00	0.00
49	0.45	0.00	0.00
50	0.45	0.00	0.00
51	0.45	0.00	0.00
52	0.45	0.00	0.00
53	0.45	0.00	0.00
54	0.45	0.00	0.00
55	0.45	0.00	0.00
56	0.45	0.00	0.00
57	0.45	0.00	0.00
58	0.45	0.00	0.00
59	0.45	0.00	0.00
60	0.45	0.00	0.00
61	0.45	0.00	0.00
62	0.45	0.00	0.00
63	0.45	0.00	0.00
64	0.45	0.00	0.00
65	0.45	0.00	0.00
66	0.45	0.00	0.00
67	0.45	0.00	0.00
68	0.45	0.00	0.00
69	0.45	0.00	0.00
70	0.45	0.00	0.00
71	0.45	0.00	0.00
72	0.45	0.00	0.00
73	0.45	0.00	0.00
74	0.45	0.00	0.00
75	0.45	0.00	0.00
76	0.45	0.00	0.00
77	0.45	0.00	0.00
78	0.45	0.00	0.00
79	0.45	0.00	0.00
80	0.45	0.00	0.00
81	0.45	0.00	0.00
82	0.45	0.00	0.00
83	0.45	0.00	0.00
84	0.45	0.00	0.00
85	0.45	0.00	0.00
86	0.45	0.00	0.00
87	0.45	0.00	0.00
88	0.45	0.00	0.00
89	0.45	0.00	0.00
90	0.45	0.00	0.00
91	0.45	0.00	0.00
92	0.45	0.00	0.00
93	0.45	0.00	0.00
94	0.45	0.00	0.00
95	0.45	0.00	0.00
96	0.45	0.00	0.00
97	0.45	0.00	0.00
98	0.45	0.00	0.00
99	0.45	0.00	0.00
100	0.45	0.00	0.00

1000000

1000000

1000000

WIND SPEED AND DIRECTION

The wind speed was measured by a cup anemometer mounted on a 10 foot pole. The wind direction was measured by a wind vane mounted on a 10 foot pole. The wind speed and direction were recorded every 15 minutes.

The Survey data for the three 10 foot poles in the Survey, 5 of which were equipped with air pollution controls. The total time used was 500 hours per month.

Losses to the atmosphere as a result of 6 hours per day operation of the equipment is as follows:

$$\frac{0.62}{2,500} = 0.000248 = 0.05 \text{ tons per day} = 100 \text{ lbs/day} = 5.3 \text{ lb/ton of lime.}$$

5.3

100

TYPE CHEMICAL TREATMENT

TYPE	DATE	PERCENTAGE
Advance Galvanizing	8-28-39	0.65
Advance Galvanizing	9-28-39	0.61
Emco	1-26-39	0.66
Emco	1-16-39	0.69
L. A. Galvanizing	5-11-39	0.55
Superior Pacific	3-26-39	0.63
AVERAGE		0.62

THE SINGLE CALCULATING KILN

The emission factor for lime calcining processing kilns was determined by a recent stack test. Only one kiln is located in the county; 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:

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

STUDY OF THE EFFECT OF TEMPERATURE ON THE RATE OF REACTION

TEMPERATURE (°C)	INITIAL RATE (M/L)	INITIAL RATE (M/L)	INITIAL RATE (M/L)	INITIAL RATE (M/L)
25.0	0.0010	0.0010	0.0010	0.0010
30.0	0.0015	0.0015	0.0015	0.0015
35.0	0.0025	0.0025	0.0025	0.0025
40.0	0.0040	0.0040	0.0040	0.0040
45.0	0.0060	0.0060	0.0060	0.0060
50.0	0.0090	0.0090	0.0090	0.0090
55.0	0.0130	0.0130	0.0130	0.0130
60.0	0.0180	0.0180	0.0180	0.0180
65.0	0.0250	0.0250	0.0250	0.0250
70.0	0.0350	0.0350	0.0350	0.0350
75.0	0.0500	0.0500	0.0500	0.0500
80.0	0.0700	0.0700	0.0700	0.0700
85.0	0.1000	0.1000	0.1000	0.1000
90.0	0.1400	0.1400	0.1400	0.1400
95.0	0.1900	0.1900	0.1900	0.1900
100.0	0.2600	0.2600	0.2600	0.2600

1.0000000000000000

The results of the survey showed that 1245 tons per month of zinc were recovered by smelting in eight furnaces. All the furnaces were equipped with air pollution control equipment. The emission factor therefore includes the emissions due to normal melting as well as the amount 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 smelting in eight furnaces. All the furnaces were equipped with air pollution control equipment.

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

$$\frac{10.8}{2,000} = \frac{1245}{22,500} = 0.30 \text{ tons per day}$$

Losses to atmosphere using air pollution control equipment:

$$\frac{0.4}{2,000} = \frac{1245}{22,500} = 0.01 \text{ tons per day}$$

Amount prevented from going to the atmosphere:

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

WIND GENERATED FURFACE TEST DATA

WIND DIRECTION	WIND SPEED KTS/HR	WIND SPEED KTS/HR	WIND SPEED KTS/HR	WIND SPEED KTS/HR
1000	13.5	6.5	10.5	10.5
1000-10	13.5	6.5	10.5	10.5

1.

UNIT TRAINING CENTER

Air contaminants are present in the atmosphere of the tropics. Such as in the commercial and domestic sectors of the country. Air pollution is a result from the ports being not controlled.

The article is a study on the method of determining the
back data to the design construction. A test is conducted on a rotating drum
rotating a shaft at a speed of 1,350 rpm. The test is of such a nature
is considered that the results obtained will be of a rotating drum,
that these results when applied to the design of the pump will
also have the same extension to the outside also pump or that indicated by
the test.

A test conducted on a water scrubber venting a sand reclaiming system showed an emission of 0.30 lbs. per ton. By combining this test with the shalprint test and considering that only a minor number of foundries are equipped with baghouses, the emission factor can be estimated at 0.3 lbs. per ton of sand handled.

The amount of acid used for casting metal is proportional to the metal poured and an average of 5 lbs. of acid to 1 lb. of metal is estimated for all metals cast in acid.

Number of the number of each block 10,000 that per month of all installments
paid in good.

Lesson to the other boys:

$$\frac{0.3}{2 \times 10^6} = \frac{21,600}{200,000} = 0.108 \text{ in. } \approx 0.11 \text{ in. } \text{ per sec.}$$

FOUNDRY SAND HANDLING

COMPANY	TEST NO.	METAL	CONTROLS	SAND PROCESSING LBS/HR	TOTAL LOSSES LBS/HR	LOSSES LBS/TON
Steel Castings	0-518	Gray Iron	Settling Chamber	27,000	With control 7.5 Without 6.0	With 7.5 Without 6.0
	0-432	Steel Castings	Sonnerble Scrubber	50,000	7.5	7.5

Aluminum and Brass Castings, 1946

FUNCTION

UNIT, SHIP YARD
2000/1000

Aluminum, Crucible	7,935
Aluminum, Reverberatory	15
Brass, Crucible	6,735
Brass, Reverberatory	13
Brass, Rotary	733
Brass, Electric	4,521
Iron, Cupola	19,170
Iron, Electric	1,428
Iron, Reverberatory	1,043
Lead, Pot	60
Magnesium, Pot	150
Steel, Arc	2,907
Steel, Induction	100
TOTAL	36,801

10/1/54

It is estimated that 1,000 lbs. of oil is used per day. It was estimated that the
oil contained 1 lb. of oil per barrel or 16 lbs. and the oil was
6 pounds per gallon. The total oil used was estimated as follows:

$$\frac{500 \times 1,000 \times 16}{8} = 1,250 \text{ gallons of oil per day.}$$

Average combustion contaminants as calculated from six tests Nos. C-300,

C-301, C-306, C-308, C-314 and C-372, is .026 lbs. per hour per gallon of oil.

With an average 1 hour process time, air contamination is 0.26 lbs. per gallon
of oil used.

$$\text{Emissions to atmosphere} = \frac{1,250}{2,000} \times 0.26 = 0.16 \text{ tons per day.}$$

Air contaminants due to combustion of fuels is being reported separately
and the above figure includes those also.

CONFIDENTIALITY

TYPE	CLASSIFICATION	CONFIDENTIALITY
INTERESTING	C-301	C-050
CONFIDENTIAL (NOT LIT)	C-303	C-017
CONFIDENTIAL & INTERESTING	C-301	C-010
CONFIDENTIAL INFO.	C-304	C-058
CONFIDENTIAL	C-300	C-064
EXCLUDED FROM	C-301	C-015
TOTAL		C-065

MISCELLANEOUS EQUIPMENT USED IN THE METALLURGICAL INDUSTRY

Results of the industry survey showed that in addition to the main divisions of metallurgical equipment there were 51 miscellaneous sources of air contaminants. The total air contaminant emission is considered to be minor in air pollution potential due to the small number of sources and since air pollution control devices are being used on 35% of the equipment. In some instances the emissions from the uncontrolled sources is not known by actual test data but by comparison to similar equipment the losses can be estimated. In one instance the data is not available although attempts were made to obtain the data from the company which operates the equipment. In that instance, the air contaminants being generated are radioactive and the effluent is monitored by the company. The air contaminants are regulated by the Atomic Energy Commission.

A list of the equipment included in this category is as follows:

1. Wax burnout ovens.
2. Uranium carbide melting furnaces.
3. Zirconium melting furnaces.
4. Titanium melting furnaces.
5. Gold and silver reclaiming furnaces.
6. Cerrobend metal equipment.
7. Tin reclaiming equipment.
8. Abrasive blasting conducted only in foundries
(all other abrasive blasting was reported separately)
9. Virgin zinc remelting furnaces.
10. Brass melting cupola furnaces.