EXHIBIT 4

STACK TEST RESULTS

Results of stack tests over a nine-year period are presented in Table 4.1.

AP-42 fugitive emission factors for reverberatory and rotary copper smelting furnaces are presented in Table 4.2. The fugitive emission factors for top-blown reverberatory secondary copper smelters are not based on actual data but on estimates. Chemetco believes that a reasonable fugitive emission factor for its converters is 1.75 lb/ton (based on an assumption that total uncontrolled process emissions are 35 lb/ton and that 5% of that total comprises uncontrolled fugitive emissions).

Tables 4.3 and 4.4 set forth the reductions in fugitive particulate emissions which Chemetco expects to achieve using improved charging and tapping controls on a four-converter mode of operation.

TABLE 4.1

SUMMARY OF CHEMETCO STACK TEST DATA

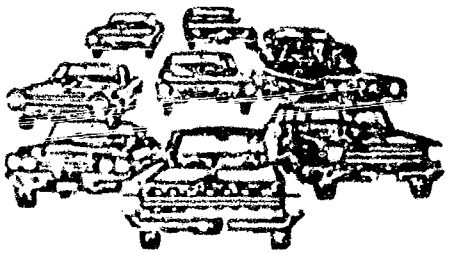
metric Flow Rate SCFM (Dry)	SCFM (Dry)	Stack Velocity (F.p.s.)	Gas Molecular Wt. (Wet)	Gas Moisture Content by Method 5 (%)	Absolute Stack Pressure (in. Hg)	Ave. Stack Temperature of Gases °F	Isokinetic Variation (%)	Gas Analysis, % (by Orsat) CO_2	CO	O_2	N_2
18,355	1,101,300	22.74		20.8	29.68	125		4.1	<0.2	16.6	79.1
18,146	1,088,760	23.08		23.0	29.77	120		4.1	<0.2	16.6	79.1
17,045	1,022,700	21.27		21.5	29.73	125		2.8	<0.2	17.2	79.8
18,270	1,096,200	21.27		16.5	29.70	120		2.8	<0.2	17.2	79.8
16,364	981,840			16.0							
14,601	888,000			16.0							
14,800	888,000			16.0							
16,568	994,070	20.98	26.71	20.9	29.69	120	108	1.4	0	19.6	79.0
12,802	768,115	16.33	26.86	18.3	29.52	140	103	0.6	0	19.3	80.1
15,651	939,085	21.9	27.30	16.71	29.81	160	102	3.3	0	15.7	81
19,630	1,178,297	20.7	27.31	13.43	29.71	141	95.91	0	0	19	81
24,993	1,499,553	30.72	28.02	8.73	29.43	119	101.5	0.4	0.1	20	79.6
28,000	1,680,000	31.48	28.26	9.55	29.64	130	93.5	4.67	0.1	14.7	80.6
27,600	1,656,000	30.99	28.24	9.57	29.64	127	93.2	5.0	0.1	13.0	82.0
23,600	1,416,000	27.27	28.03	12.13	29.64	127	95.9	5.67	0.1	12.5	81.8
24,333	1,460,000	27.39	28.14	13.22	29.70	105.75	96.4	7.67	0.1	12.0	80.3
21,833	1,310,000	27.34	27.97	14.70	29.70	158.75	98.4	7.67	0.1	11.8	80.5
20,350	1,221,000	26.18	27.10	20.70	29.20	130.75	104.0	6.0	0.1	13.0	81

1 through ST-18 as they were performed and by C for Converter
1 order for each converter.

d ST13C3-5

TABLE 4.2

FUGITIVE EMISSION FACTORS, AP-42



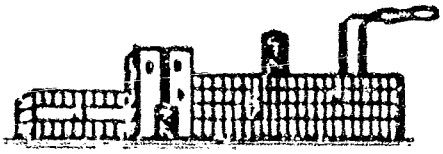
AP - 42

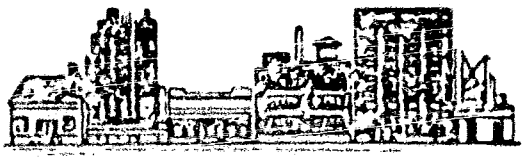
Part A

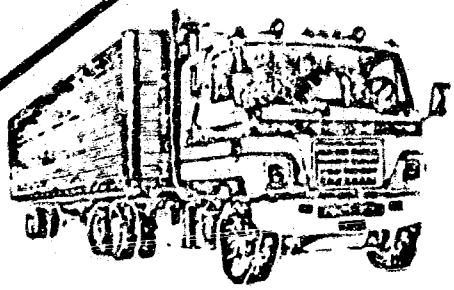
COMPILATION OF AIR POLLUTANT EMISSION FACTORS

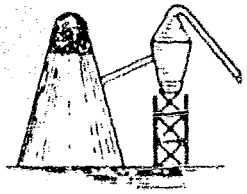
SECOND EDITION

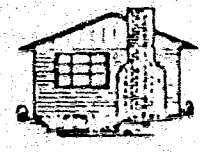
(Third Printing with Supplements 1–5)

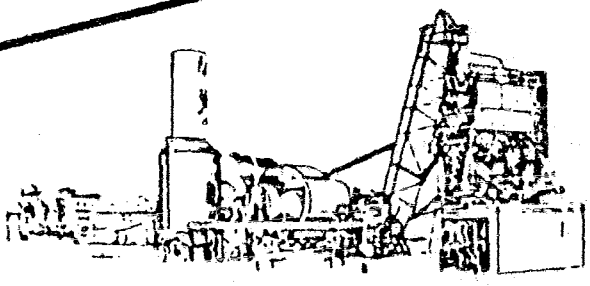


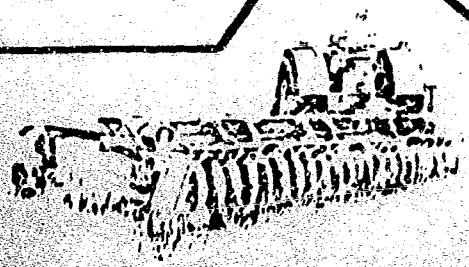












U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Waste Management
Office of Air Quality Planning and Standards
Research Triangle Park, N.C. 27711

 Charles Masser

7.9.3 Fugitive Emission Factors

Potential sources of fugitive particulate emissions from secondary smelting and alloying operations are sweating, drying, insulation burning, smelting furnaces and casting. Table 7.9-2 shows these sources and their corresponding emission factors.

No data are presently available concerning size characteristics of the fugitive emissions.

Table 7.9-2. POTENTIAL FUGITIVE PARTICULATE EMISSION FACTORS FOR UNCONTROLLED COPPER SMELTING AND ALLOYING

EMISSION FACTOR RATING: E

Types of operation	Particulates[a]	
	lb/ton	kg/MT
Sweating furnace[b]	0.75	0.38
Rotary dryer[b]	13.75	6.88
Insulation burning[c]	13.75	6.88
Electric induction furnace[d]	0.14	0.07
Reverberatory furnace[e]	5.27	2.64
Rotary furnace[d]	4.43	2.22
Crucible furnace[e]	0.49	0.25
Cupola (blast) furnace[e]	3.66	1.83
Casting[b]	0.015	0.008

[a]Factors are expressed as units per volume of scrap processed, except casting, which is expressed as units per volume cast.
[b]Engineering judgement assuming that fugitive emissions are equal to 5% of stack emissions shown in Reference 4.
[c]Engineering judgement assuming that fugitive emissions are equal to 5% of stack emission factor shown in Reference 5.
[d]Engineering judgement assuming that fugitive emissions are equal to 5% of stack emission factor shown in Reference 1.
[e]Engineering judgement, average of two sets of data, assuming that fugitive emissions are equal to 5% of stack emission factors shown in References 1 and 5.

Table 7.9-1. PARTICULATE EMISSION FACTORS FOR FURNACES USED IN SECONDARY COPPER SMELTING AND ALLOYING PROCESSES[a,b]

EMISSION FACTOR RATING: B

Furnace and charge type	Control equipment[c]	Emissions			
		Avg kg/MT	Range kg/MT	Avg lb/ton	Range lb/ton
Cupola					
Scrap copper	0	0.002	-	0.003	-
Insulated copper wire	0	120	-	230	-
	1	5	-	10	-
Scrap copper and brass	0	35	30-40	70	60-80
	1	1.2	1.0-1.4	2.4	2.0-2.8
Reverberatory					
Copper	0	2.6	0.4-15	5.1	0.8-30
	2	0.2	0.1-0.3	0.4	0.3-0.6
Brass and bronze	0	18	0.3-35	35	0.6-70
	2	1.3	0.3-2.5	2.6	0.05-5
Rotary					
Brass and bronze	0	150	50-250	300	100-500
	1	7	3-10	13	6-19
Crucible and pot					
Brass and bronze	0	11	1-20	21	2-40
	1	0.5	0.1-1	1	0.1-2
Electric arc					
Copper	0	2.5	1-4	5	2-8
	2	0.5	0.02-1.0	1	0.04-2
Brass and bronze	0	5.5	2-9	11	4-18
	2	3	-	5	-
Electric induction					
Copper	0	3.5	-	7	-
	2	0.25	-	0.5	-
Brass and bronze	0	10	0.3-20	20	0.5-40
	2	0.35	0.01-0.65	0.7	0.01-1.3

[a] All factors given in terms of raw materials charged to unit.

[b] The information for Table 7.9-1 was based on unpublished data furnished by the following:
Philadelphia Air Management Services, Philadelphia, Pennsylvania.
New Jersey Department of Environmental Protection, Trenton, New Jersey.
New Jersey Department of Environmental Protection, Metro Field Office, Springfield, New Jersey.
New Jersey Department of Environmental Protection, Newark Field Office, Newark, New Jersey.
New York State Department of Environmental Conservation, New York, New York.
The City of New York Department of Air Resources, New York, New York.
Cook County Department of Environmental Control, Maywood, Illinois.
Wayne County Department of Health, Air Pollution Control Division, Detroit, Michigan.
City of Cleveland Department of Public Health and Welfare, Division of Air Pollution Control, Cleveland, Ohio.
State of Ohio Environmental Protection Agency, Columbus, Ohio.
City of Chicago Department of Environmental Control, Chicago, Illinois.
South Coast Air Quality Management District, Los Angeles, California.

[c] Control equipment: 0 signifies none operated
1 indicates electrostatic precipitator
2 indicates baghouse filter system

13.5

TABLE 4.3 STACK TSP EMISSION RATE ESTIMATES

	Process Weight Rate (PW) (lb PW/hr)		AP-42[c] Emission Factor	Uncontrolled Stack Emission Rate (lb TSP/hr)		Scrubber Efficiency[d]	Controlled Stack Emission Rate[e] (lb TSP/hr)	
	Present[a]	New[b]	(lb TSP/ton PW)	Present	New	(Percent)	Present	New
Smelting:	15,790	15,720	35	276	261	98.4	4.2	4.0
Refining:	27,150	27,730	35	475	153	98.4	7.2	2.3
Slag Treatment:	10,710	15,469	35	187	271	98.4	2.8	4.1
Slag Recovery:	-0-	11,000	35	-0-	193	98.4	-0-	2.9
Totals:	53,650	69,919		938	878		14.2	13.3

[a] Present 3-converter operation.

[b] 4-converter operation with metallurgical process change.

[c] Ref. 2., Section 8.0 (TSP = total suspended particulate). Chemetco does not concede the validity of such emission factors.

[d] $100 - \frac{5.0 \text{ lb TSP/hr}}{18{,}152 \text{ lb PWR/hr}} \left| \frac{2000 \text{ lb PWR/ton PWR}}{35 \text{ lb TSP/ton PWR}} \right| 100 = 98.4\%$

[e] (Unc. Stack Emiss. Rate) x (1.0 - Scrubber Eff) x (0.95 capture efficiency)
Note: This calculation assumes 5 percent of the total uncontrolled emissions are fugitive emissions during charging and tapping. The assumption has not been verified.

TABLE 4.4 FUGITIVE TSP EMISSION RATE ESTIMATES

	Uncontrolled Stack Emission Rate (lb TSP/hr)		Uncontrolled Fugitive Emission Rate[c] (lb TSP/hr)		Controlled Fugitive Emission Rates (lb TSP/hr)[d]			
					Present[e]		New	
	Present[a]	New[b]	Present	New	Charging	Tapping	Charging	Tapping
Smelting:	276	261	13.8	13.1	2.1	1.4	2.0	1.3
Refining:	475	153	23.8	7.7	3.6	2.4	1.2	0.8
Slag Treatment:	187	271	9.4	13.6	1.4	0.9	2.0	1.4
Slag Recovery:	-0-	193	-0-	9.7	-0-	-0-	1.5	1.0
Totals:	938	878	47.0	44.1	7.1	4.7	6.7	4.5

[a] Present 3-converter operation.

[b] 4-converter operation with metallurgical process change.

[c] 5 percent of uncontrolled stack emission rate (Ref. 2). The percentage is based on nonverified estimates.

[d] assumes: (1) that fugitive emissions occur: 60% during charging, 40% during tapping
(2) charging controls achieve: 75% control (capture + removal)
(3) tapping controls achieve: 75% control (capture + removal)

[e] 3 converter operation with fugitive emission controls for tapping and charging

EXHIBIT 5

CHEMETCO'S COMPLIANCE PROGRAM

PROGRAM

Chemetco will install, operate, and maintain charging and tapping controls on its converters to comply with all applicable Air Pollution Control Regulations and the provisions of the Illinois Environmental Protection Act.

SCHEDULE

1.	Submit application for construction permit to install charging and tapping controls on existing converters	Completed
2.	Shut down first existing converter	Completed
3.	Begin construction of charging and tapping controls on first existing converter	Completed
4.	Finish installation of charging and tapping controls on first existing furnace and start-up	Completed
5.	Shut down second existing converter	Completed
6.	Begin construction of charging and tapping controls on second existing converter	December 6, 1982
7.	Finish installation of charging and tapping controls on second existing converter and start-up	March 15, 1983
8.	Begin construction of charging and tapping controls on third existing converter	March 15, 1983

9.	Finish installation of charging and tapping controls on third existing converter	June 1, 1983
10.	Complete stack tests	October 1, 1983

STACK SAMPLING

Sampling of the converter stacks will be conducted using procedures approved by the Agency. The results of these tests, in triplicate, will be forwarded to the Agency promptly after the test results are compiled and finalized.

The Agency may witness these tests. The Agency's Regional Office

Environmental Protection Agency
Division of Air Pollution Control
115A West Main Street
Collinsville, Illinois 62234

will be notified a minimum of thirty days prior to the expected date of these tests and further notified a minimum of five working days prior to the tests of the exact date, time, and place.

During each compliance demonstration, simultaneous visible evaluations of the fugitive emissions from the melt shop building will be conducted in accordance with applicable State air pollution regulations. Raw data sheets of these evaluations will be submitted to the Agency with the stack test results.

NEW COMPLIANCE PLAN

If the stack tests fail to demonstrate compliance, Chemetco will submit a new compliance plan to the Agency on or before November 15, 1983. A compliance plan shall provide for coming into compliance as expeditiously as possible. If the Parties fail to agree on a compliance plan by January 16, 1984, the dispute shall be presented to the Board for resolution.

EXHIBIT 7

CITIZEN'S PETITION

EXHIBIT 7 , PCB 83-2

PETITION

2/25/81

We the undersigned people of the area known as Oldenberg would like to issue this petition of complaint against the company known as Chemetco, Inc., for emissions released into the air. These emissions are visible at a point beyond the property line of the above mentioned emission source. We feel that this situation should be corrected in accordance with the State of Illinois Air Pollution Control Regulations Rule 203(f).

	Name	Address
1.	Edward Bulow	Rt 1 Box 673 East Alton, Ill
2.	Frances Bulow	Rt 1 Box 673 East Alton Ill
3.	Hilda Klein	E.#1 Box 667 East Alton, Ill 62024
4.	Charles Kelly	RR#1 Box 667 East Alton Ill
5.	Maxwell Gibson	R.#1 Box 666 E. Alton, Ill
6.	Kenneth Gilpin	R#1 Box 666 E. Alton Ill
7.	David A. Wilson	R#1 Box 666 East Alton Ill
8.	Bernice Williams	RR#1 East Alton
9.	Gary Shelton	RR#1 Box 669 E. Alton
10.	William Hamm	RR 1 Box 667 E.A.
11.	Chloe Hamm	RR#1 Box 669 E. Alton
12.	Mrs. Kretchen	RR#1 East Alton Ill
13.	Sharon K. Stanley	RR#1, Box 659 East Alton, Ill.
14.	Nancy Thompson	RR#1 Box 659 East Alton Ill
15.	Ralph Mueller	R1 Box 656 E. Alton Ill.
16.	Karen J. Mueller	RR1 Box 656 E. Alton Ill.
17.	James R Davis	R1 E. Alton Ill.
18.	Margret Davis	R#1 E. Alton, Ill
19.	Roger F Porter	R#1 E. Alton Ill.
20.	Amy L Jones	RR#1 E Alton Ill

PETITION

We the undersigned people of the area known as Oldenberg would like to issue this petition of complaint against the company known as Chemetco, Inc., for emissions released into the air. These emissions are visible at a point beyond the property line of the above mentioned emission source. We feel that this situation should be corrected in accordance with the State of Illinois Air Pollution Control Regulations Rule 203(f).

	Name	Address
1.	Jack J. Harp	RR1 Box 642 East Alton, Ill
2.	Jacqueline Harp	RR1 Box 642 E Alton Ill.
3.	Melvin Lee	Box 644 12 Alton Ill.
4.	Bernard Lee	Box 644 E Alton Ill.
5.	Ethel Harp	Box 642 E. Alton Ill
6.	Terry Lee	Box 644 E Alton Ill
7.	Jessie Klein	Box 644 RR1 East Alton Ill
8.	John Buehrer	RR#1 Box 674 East Alton Ill
9.	Sophia Buehrer	RR#1 Box 674 East Alton Ill
10.	Clara B Gray	RR# Box 672 East Alton Ill
11.	Theresa Gray	RR#1 Box 672 East Alton Ill.
12.	Julius Buehrer	RR#1 Box 671A East Alton, Ill
13.	Eugene Porter	RR1 Box 651 East Alton Ill
14.	Lillian Porter	RR1 Box 651 East Alton, Ill 62024
15.	James A Herrington Jr	RR1 East Alton, Ill 62024
16.	Gladys Herrington	RR1 East Alton Ill 62024.
17.	John B Herrington	RR1 East Alton, Ill 62024
18.	Alex Ross	RR#1 East Alton, Ill 62024
19.	Emmie Ross	RR#1 East Alton, Ill 62024
20.	Joyce A. Herrington	RR1 East Alton, Ill. 6202

2/23/81

PETITION

We the undersigned people of the area known as Oldenberg would like to issue this petition of complaint against the company known as Chemetco, Inc., for emissions released into the air. These emissions are visible at a point beyond the property line of the above mentioned emission source. We feel that this situation should be corrected in accordance with the State of Illinois Air Pollution Control Regulations Rule 203(f).

Name	Address
1. Joyce Madalin	R#1 East Alton
2. James Madalin	RR#1 East Alton, Ill.
3. Edward Graft	RR1 East Alton, Ill
4. Kathleen F. Wilson	RR#1 Box 166 East Alton, Ill
5. Kim Wilson	RR#1 Box 166 East Alton, Ill
6. Jeanette Klug	R1 Box 645 East Alton, Ill.
7. Jacob A. Klug	R1 Box 145 East Alton, Ill
8. Ralph E. Boettcher	R.1 East Alton, Ill.
9. Christ E. Boettcher	R1 East Alton, Ill
10. Mildred Boettcher	R1 East Alton, Ill
11.	
12. The undersigned are employed by Christ E. Boetticher at the above address.	
13.	
14. Robert Boettcher	726 Almond West East Alton
15. Marion Bradley	3101 Broadview E. St. Louis
16.	
17.	
18.	
19.	
20.	

RECEIVED
Environmental Protection Agency
FEB 26 1981
115A W. MAIN ST.