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Bethlehem Steel Corporation

BETHLEHEM, PA 18016

July 11, 1994

Session 72--Selecting the Appropriate Emission Factor for Estimating Emissions from Iron and Steel Sources

Summary of NO_x, VOC and CO Measurements Conducted at Several Steel Plants

Air and Waste Management Association 87th Annual Meeting, Cincinnati, OH

Thank you for requesting copies of the slides shown during the presentation referenced above. As Joe Pezze from the Pennsylvania Department of Environmental Resources pointed out to me, it is somewhat ironic to be distributing the stack sampling results presented as an illustration of why there is no substitute for stack test data from the specific source in question.

If you have any question about this information, please call me at ~~(610) 694-6599~~ (219) 787-[redacted] 2712 or write to me at:

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Thank You.

Sincerely,

Thomas W. Easterly, P.E., DEE

enclosure

KEY POINTS

1. We must understand which process variables impact emissions.

Examples: lb/ton vs lb/mmbtu vs fuel sulfur

2. We must understand what we are looking for (THC vs VOC).

3. There is no substitue for a stack test for CO and NO_x.

4. In a simple process, a mass balance may be adequate for VOC's, but more likely will overstate emissions. A representative test is much better.

COKE UNDERFIRING STACK
(LB/TON COAL CHARGED)

	SO2	NOx	VOC	CO
PLANT A		1.91	0.164	
PLANT B		1.56	0.109	
PLANT C		2.47	1.387	
PLANT D		2.12	0.590	
PLANT E		1.22	3.360	
PLANT F	3.03	0.47	0.010	2.49
PLANT G	1.06	2.78	0.006	0.38
PLANT H	1.17	0.78		0.13
PLANT I	1.02	0.69	0.038	0.09
PLANT J	2.02	0.98	0.019	0.14
PLANT K	2.40	1.02	0.029	0.08
PLANT L		0.69		
PLANT M		0.22	0.002	
PLANT N		0.23	0.002	
AVERAGE	1.78	1.22	0.476	0.55
NAPAP	4.00	0.04	2.000	
NAPAP/AVG	224%	3%	420%	

COKE PUSHING (LB/TON COAL CHARGED)

	SO2	NOx	VOC	CO
PLANT A	0.127	0.0108	0.017	0.027
PLANT B	0.039	0.019	0.005	0.067
PLANT C	0.033	0.019	0.003	0.137
AVERAGE	0.0663	0.0163	0.00833	0.077
NAPAP	3.3	0.03	0.2	0.07
NAPAP/AVG	4974.9%	184.4%	2400.0%	90.9%

SINTER PLANT WINDBOX EMISSIONS (lb/tn Sinter)

	SO2	NOx	VOC	CO
PLANT A	0.204	0.883	1.091	
PLANT B	0.38	0.11	0.359	30.66
PLANT C	1.51			
PLANT D	0.4505	0.603	0.1446	35.677
PLANT E			0.33	
AVERAGE	0.6361	0.532	0.6415	33.169
NAPAP	2.5	0.3	1.4	44
NAPAP/AVG	393.0%	56.4%	218.2%	132.7%

OTHER EXAMPLES

STEEL COLD MILLS

NAPAP 0.56 LB VOC/TON OF STEEL

PLANT A 0.002 LB/TON

AT A 3 MILLION TON PER YEAR MILL

NAPAP = 840 TONS PER YEAR OF VOC
PLANT A = 3 TONS PER YEAR OF VOC

ELECTRIC ARC FURNACES

	SO2	NOx	VOC	CO
NAPAP	0.7	0.1	0.35	18
PLANT A		0.25	0.04	2.38
GEDDIS		0.31	LT	2.0
		TO	0.15	TO
		0.54		4.0

CASTER STEAM VENT VOC's (NMOC)

	lb/hr	lb/tn	ppm
Plant A Bloom Caster	4.06	0.0314	3.54
Plant B Slab Caster # 1	3.10	0.0190	2.70
Plant B Slab Caster # 2	15.40	0.0490	7.60
AVERAGES	7.52	0.0331	4.61