OhioEPA
State of Ohio Environmental Protection Agency
Southeast District Office
2195 Front Street
Logan, OH 43138
TELE: (740) 385-8501 FAX: (740) 385-6490
www.epa.state.oh.us
Bob Taft, Governor
Bruce Johnson, Lieutenant Governor
Joseph P. Koncelik, Director

October 30, 2006

Re: Coshocton County
Clow Water Systems Company
Facility ID # 0616010006
PTI # 06-07603
EU ID # F009

Patrick Huth
Clow Water Systems Company
P.O. Box 6001
2266 South Sixth Street
Coshocton, OH 43812-6001

Dear Mr. Huth:

This letter is to inform you that on October 26, 2006, this office received your application for an administrative modification of the permit to install (PTI) for the above referenced air pollution source, and that I have been assigned to process your application. After our initial review, your application has been found to be preliminarily complete, therefore we can begin the technical review of your application. This preliminary completeness determination does not imply that the application is approvable, only that we have enough information to continue the review. **It does not allow construction, installation or modification of any air contaminant source (emissions unit).**

Applications are generally reviewed on a first come, first serve basis. During the technical review, you may be contacted for additional information or for clarification. Once the review is complete, a PTI recommendation will be prepared either approving or denying the application (if review indicates a denial, you will be contacted to discuss options). The recommendation will then be forwarded to Ohio EPA, Division of Air Pollution Control (DAPC), Central Office for their review and issuance. It is possible they may ask for clarifying information as well before proceeding to issue either a draft permit, a direct final permit, or a denial of the application.

Processing times for applications vary considerably depending upon the complexity of the project, the technical completeness of your application, the approvability of your application and upon the various workloads of the offices reviewing the applications. In order to help your planning, we estimate that a final determination concerning your application will be issued in approximately 2 months. **However, this processing time is a very rough estimate and you should not commit significant funds based on the assumption that you will obtain a permit within the described time.** Please contact me or see our permit status web page at http://www.epa.state.oh.us/dapc/pti/ptimain.html for more information on the expected processing time of your application.

Please be assured that we will do everything possible to process your application in a timely manner. If you have any questions concerning this letter or your application, please contact me at (740) 380-5245 or email kimbra.reinbold@epa.state.oh.us.

Sincerely,

Kimbra L. Reinbold
Division of Air Pollution Control
Southeast District Office

KLR/mlm

Kimbra Reinbold - Revised Calculations

From: "Craig Schmeisser" <Craig.Schmeisser@rmtinc.com>
To: <kimbra.reinbold@epa.state.oh.us>
Date: 10/30/2006 9:54 AM
Subject: Revised Calculations
CC: <patrick.huth@clowwater.com>

Attached are the revised calculations. Besides changing the requested Z-sources sheets to show the coating density and the % HAPs, any of the Table 2 (non-HAP emitters w/ HAP potential) were removed.

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HAP Summary Table
Clow Water Systems Company
Coshocton, Ohio

Hazardous Pollutant	Emissions Units																							HAP Total
	F-1 (EU-F1)	F-2 (EU-F2)	F-3 (EU-F3)	F-4 (EU-F4)	F-5	F-6 (EU-F6)	F-7 (EU-F7)	F-8 (EU-F8)	F-9 (EU-F9)	F-10 (EU-F10)	F-11 (EU-F11)	F-12 (EU-F12)	F-13	F-14	F-15	F-16	F-17 (EU-F17)	F-18 (EU-F18)	F-19 (EU-F19)	F-20 (EU-F20)	F-21 (EU-F21)	F-22 (EU-F22)	F-23 (EU-F23)	
	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)
Antimony (Sb)							4.66E-04	3.39E-06	8.85E-05	3.11E-05	3.80E-06	4.52E-06											2.67E-05	2.42E-05
Arsenic (As)	7.19E-04	1.25E-04	2.30E-04			2.29E-02	8.55E-05	0.00E+00	1.14E-04	3.70E-06	0.00E+00	0.00E+00											1.72E-06	2.42E-06
Beryllium (Be)						7.03E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00											1.52E-04	3.45E-02
Cadmium (Cd)			6.00E-03		5.72E-03	2.50E-02	3.94E-04	1.43E-05	1.14E-04	2.83E-05	1.81E-05	1.91E-05											2.01E-04	7.89E-02
Chromium (Cr)	1.03E-03	1.81E-04	2.37E-03		6.20E-02	4.69E-03	2.94E-03	2.95E-05	6.72E-04	1.90E-04	1.50E-04	3.00E-05	2.51E-03										1.20E-05	1.17E-01
Cobalt (Co)						2.29E-02	3.88E-02	1.11E-04	5.14E-02	2.85E-03	1.25E-04	1.49E-04											7.17E-03	2.51E-01
Lead (Pb)	1.86E-02	3.95E-04	1.56E-01	1.72E-03	6.52E-02	2.93E-05	5.40E-03	9.46E-06	2.41E-03	3.60E-04	6.30E-05	1.26E-05											5.45E-06	2.42E+00
Manganese (Mn)	1.52E-07		2.19E+00	1.03E-02	2.34E-01	2.30E-02	2.37E-02	3.38E-04	2.11E-02	1.58E-03	9.74E-04	4.44E-04	5.07E-03										3.73E-06	2.30E-02
Mercury (Hg)						2.30E-02				0.00E+00													3.01E-04	3.91E-02
Nickel (Ni)						2.91E-02	6.06E-03	2.97E-04	4.02E-03	4.04E-04	3.53E-04	3.98E-04	4.16E-03										3.44E-06	7.90E-04
Selenium (Se)					5.84E-04	1.41E-06	1.85E-04	0.00E+00	1.46E-05	1.23E-05	0.00E+00	0.00E+00												0.00E+00
2,3,7,8 -TCDF																								0.00E+00
1,2,3,7,8 -PeCDF																								0.00E+00
2,3,4,7,8 -PeCDF																								0.00E+00
1,2,3,4,7,8 -HxCDF																								0.00E+00
1,2,3,6,7,8 -HxCDF																								0.00E+00
2,3,4,6,7,8 -HxCDF																								0.00E+00
1,2,3,7,8,9 -HxCDF																								0.00E+00
1,2,3,4,6,7,8 -HpCDF																								0.00E+00
1,2,3,4,7,8,9 -HpCDF																								0.00E+00
1,2,3,4,6,7,8,9 -OCDF																								0.00E+00
2,3,7,8 -TCDD																								0.00E+00
1,2,3,7,8 -PeCDD																								0.00E+00
1,2,3,4,7,8 -HxCDD																								0.00E+00
1,2,3,6,7,8 -HxCDD																								0.00E+00
1,2,3,7,8,9 -HxCDD																								0.00E+00
1,2,3,4,6,7,8 -HpCDD																								0.00E+00
Total TEQ D/F																								0.00E+00
Hydrogen Fluoride (HF)																								0.00E+00
Hydrochloric Acid (HCl)																								1.20E-02
Chlorine (Cl2)							5.14E-03		6.89E-03															2.78E-02
1,3-Dimethylnaphthalene							1.18E-02		1.68E-02														3.44E-06	4.92E-02
1-Methylnaphthalene					0.00E+00	1.41E-08	2.11E-02		2.81E-02														2.69E-07	3.84E-07
2-Methylnaphthalene						1.05E-07																		1.50E-05
3-Methylchloranthrene										1.50E-03													2.22E-06	2.59E-06
Dimethylnaphthalenes						9.37E-06																	2.58E-07	3.64E-07
7,12-Dimethylbenz(a)anthracene						1.05E-07																	2.58E-07	3.64E-07
Acenaphthene						1.05E-07																	3.44E-07	4.85E-07
Acenaphthylene						1.41E-07																	2.58E-07	3.64E-07
Anthracene						1.08E-07																	3.01E-04	5.21E+00
Benz(a)anthracene					1.84E+00	4.68E-01	1.17E+00		1.71E+00	1.45E-02													1.72E-07	2.42E-07
Benzene						7.03E-08																	2.58E-07	3.84E-07
Benzo(a)pyrene						1.05E-07																	1.72E-07	2.42E-07
Benzo(b)fluoranthene						7.03E-08																	2.58E-07	3.84E-07
Benzo(g,h)perylene						1.05E-07																	2.58E-07	3.84E-07
Benzo(k)fluoranthene						1.05E-07																	1.72E-07	2.42E-07
Chrysene						7.03E-08																	1.72E-04	2.42E-04
Dibenzo(a,h)anthracene						7.03E-05												2.20E-01	1.02E-01					3.22E-01
Dichlorobenzene																							4.30E-07	6.26E-07
Ethylene Glycol						1.78E-07																	4.02E-07	5.86E-07
Fluoranthene						1.64E-07																		0.00E+00
Fluorene																							1.06E-02	4.58E-02
Fluoride						4.39E-08	7.97E-03		1.06E-02	1.20E-02													2.58E-01	4.84E-01
Formaldehyde					4.13E-02	1.05E-01	3.39E-02		4.53E-02														2.58E-07	3.64E-07
Hexane						1.05E-07																	8.75E-05	1.51E+00
Indeno(1,2,3-cd)pyrene					0.00E+00	3.57E-06	3.60E-02		4.65E-02	1.40E-01				2.23E-01	4.39E-01	6.27E-01							2.44E-06	3.43E-06
Naphthalene						9.56E-07																	7.17E-07	1.01E-06
Phenanthrene						2.93E-07																	4.88E-04	2.17E+00
Pyrene					7.84E-01	2.14E-01	4.53E-01		6.86E-01	2.40E-02									2.80E-03	2.80E-03				5.42E-01
Toluene							4.36E-02		7.57E-02						4.50E-02	6.43E-02	3.02E-01							0.00E+00
Ethylbenzene																								4.13E-01
1,1,1-Trichloroethane							7.66E-03		4.05E-01															0.00E+00
o-Xylene																								2.17E-01
Acrolein					4.18E-02		7.17E-02		1.04E-01															0.00E+00
Acetaldehyde																								5.25E-01
Acetophenone					0.00E+00		2.68E-01		3.57E-01										6.94E-03	6.94E-03				1.39E-02
Aniline																								0.00E+00
Cumene																								0.00E+00
Dibenzofurans																								0.00E+00
Methanol														0.00E+00	0.00E+00	0.00E+00								0.00E+00
Methylene bis (phenylisocyanate) [MDI]					0.00E+00												4.15E-01							4.15E-01
Methylnaphthalenes																								
Methyl isobutyl ketone																								

HAP Summary Table
Clow Water Systems Company
Coshocton, Ohio

Hazardous Air Pollutant	Boilerplate Boiler	Boilerplate Boiler	P001	P002	P016	P017	P008	P007	P010	P013	P014	P015	P018	P019	P020	P021	P022	P023	P024	P025	P026	P027	P028	P029	P030	HAP Total
Acetaldehyde							9.24E-02		4.32E-02																	7.56E-02
m-Xylenes																										0.00E+00
Nitrobenzene					0.00E+00		1.36E-01		1.81E-01	1.30E-02																3.30E-01
o-Cresol					5.78E-01		4.32E-02		5.78E-02																	6.78E-01
m,p-Cresol							7.56E-03																			7.56E-03
o-Xylenes														2.74E-01	0.00E+00	0.00E+00										0.00E+00
Phenanthrene					6.48E-01		5.26E-01		7.01E-01	3.09E-01																2.46E+00
Phenol					0.00E+00																					0.00E+00
POMs (Not individualized)																										0.00E+00
Propanol							2.08E-03		2.75E-03																	4.81E-03
Propionaldehyde							5.83E-03		5.93E-03																	1.22E-02
Styrene																										0.00E+00
Triethyl amine (TEA)					3.98E-01		2.62E-01		4.05E-01	1.85E-02				4.50E-01	6.43E-01	1.00E+00										3.64E+00
Xylenes																										0.00E+00
Epichlorohydrin																										0.00E+00
1,2,4 Trimethylbenzene																										0.00E+00
Biphenyl					4.13E-02		6.22E-02		8.30E-02																	1.86E-01
N,N-Dimethylaniline					6.88E-02																					6.88E-02
Other HAPs - not specified																										
Total HAPs	2.06E-02	6.62E-04	2.26E+00	1.20E-02	4.77E+00	9.35E-01	3.30E+00	7.91E-04	5.06E+00	5.36E-01	1.06E-03	1.06E-03	9.76E-03	4.98E-01	9.34E-01	1.33E+00	2.01E+00	2.30E-01	1.02E-01	9.60E-03	9.60E-03	2.71E-01				22.28

Highest Individual HAP (TPY) 5.21

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HAP Summary

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

P020 & P033 Annual Emissions

Control Device: N/A

Fuel Combustion
PSD Regulated and HAP Emissions Estimates

Inputs	
717,585	= Combined potential annual total gas usage (MMBTU)
600,405	= Limited annual total Syngas used (MMBTU)
117,180	= Potential annual total natural gas used (MMBTU) (remainder left after Syngas combustion)

POLLUTANT	CAS #	Natural Gas Emission Factor (lb/MMBTU)	Emission Factor With Syngas *** (lb/MMBTU)	Potential Emissions (tpy)
PM/PM10	n/a	0.0076	0.0203	6.54
NOx	n/a	0.1000	0.1420	48.49
CO	n/a	0.0840	0.1110	38.24
Lead	n/a	0.0000005		2.93E-05
SO2	n/a	0.0006	0.0493	14.84
VOC	n/a	0.0055	0.0080	2.72
OC	n/a	0.0110	0.0080	3.05
Arsenic	7440-38-2	2.00E-08	7.64E-05	2.29E-02
Beryllium	7440-41-7	1.20E-08		7.03E-07
Cadmium	7440-43-9	1.10E-06	7.64E-05	2.30E-02
Chromium	7440-47-3	1.40E-06	1.53E-05	4.68E-03
Cobalt	7440-48-4	8.40E-08	7.64E-05	2.29E-02
Manganese	7439-96-5	3.80E-07	7.64E-05	2.30E-02
Mercury	7439-97-6	2.60E-07	7.64E-05	2.30E-02
Nickel	7440-02-0	2.10E-06	7.64E-05	2.31E-02
Selenium	7782-49-2	2.40E-08		1.41E-06
POM/2-Methylnaphthalene	91-57-6	2.40E-08		1.41E-06
POM/3-Methylchloranthrene	56-49-5	1.80E-09		1.05E-07
POM/7,12-Dimethylbenz(a)anthracene	n/a	1.60E-09		9.37E-08
POM/Acenaphthene	83-32-9	1.80E-09		1.05E-07
POM/Acenaphthylene	203-96-8	1.80E-09		1.05E-07
POM/Anthracene	120-12-7	2.40E-09		1.41E-07
POM/Benz(a)anthracene	56-55-3	1.80E-09		1.05E-07
Benzene	71-42-2	2.10E-06	1.56E-03	4.68E-01
POM/Benzo(a)pyrene	205-99-2	1.20E-09		7.03E-08
POM/Benzo(b)fluoranthene	205-99-2	1.80E-09		1.05E-07
POM/Benzo(g,h,i)perylene	191-24-2	1.20E-09		7.03E-08
POM/Benzo(k)fluoranthene	205-82-3	1.80E-09		1.05E-07
POM/Chrysene	218-01-9	1.80E-09		1.05E-07
POM/Dibenzo(a,h)anthracene	53-70-3	1.20E-09		7.03E-08
Dichlorobenzene	25321-22-6	1.20E-06		7.03E-05
POM/Fluoranthene	206-44-0	3.00E-09		1.76E-07
POM/Fluorene	86-73-7	2.80E-09		1.64E-07
Formaldehyde	50-00-0	7.50E-05		4.39E-03
Hexane	110-54-3	1.80E-03		1.05E-01
POM/Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-09		1.05E-07
Naphthalene	91-20-3	6.10E-07		3.57E-05
POM/Phenanathrene	85-01-8	1.70E-08		9.96E-07
POM/Pyrene	129-00-0	5.00E-09		2.93E-07
Toluene	108-88-3	3.40E-06	7.13E-04	2.14E-01
Total POM				4.32E-06
Total HAPs				9.35E-01

* FROM AP-42 Fifth Edition, Supplement D, TABLE 1.4-3&4. EMISSION FACTORS FOR METALS FROM NATURAL GAS COMBUSTION; 7/98 External Combustion Sources 1.4-9. Many emission factors were < than a specific value.
The number of the specific value was used to error on the conservative side.

*** FROM INTERINERGY PROJECT FACTOR FOR METALS FROM SYNGAS COMBUSTION

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Flow Diagram Designation
Baghouse 250.F3

This baghouse controls: Desulfurization & Inoculation (F004)
Jolt Sand Plant (P007)
Jolt Pouring & Cooling (F009)
Jolt Shakeout (F007)

Process Description:

Baghouse 250.F3
Control Device: Baghouse
Control Device outlet grain loading (PM/PM-10): 0.0075 gr/dscf
Air Flow: 95,000 acfm 100 °F
Settling Factor (inside) PM/PM-10 0 %

Facility Process Name:	Criteria Pollutants						
Baghouse 250.F3							
Emission Factor Basis:	PM	SOx	NOx	VOC	CO	PM10	Lead
Emission Factors:	N/A					N/A	
(source)							
Potential Stack Emission Rate:							
Hourly (lb/hr)	5.78					5.78	
Annual (TPY)	25.32					25.32	
Average Stack Emission Rate (Prev. 2 Yrs.):							
Hourly (lb/hr)							
Annual (TPY)							
Net Emissions Increase							
Hourly (lb/hr)	5.78					5.78	
Annual (TPY)	25.32					25.32	

SAMPLE CALCULATIONS:
Potential Stack Emission Rate (lb/hr) = (Baghouse CFM) x (grain loading (gr/dscf)) x (460+70)/(460+gas temp)) x (60 min/hr) / (7,000 gr/lb)
Potential Stack Emission Rate (TPY) = (Baghouse CFM) x (grain loading (gr/dscf)) x (460+70)/(460+gas temp))x (60 min/hr) / (7,000 gr/lb) x (Potential Hrs of Operation (Hr/Yr) / (2000 lb/ton)
Average Actual Stack Emission Rate (lb/hr) = (Baghouse CFM) x (grain loading (gr/dscf)) x (460+70)/(460+gas temp))x (60 min/hr) / (7,000 gr/lb)
Average Actual Stack Emission Rate (TPY) = (Baghouse CFM) x (grain loading (gr/dscf)) x (460+70)/(460+gas temp))x (60 min/hr) / (7,000 gr/lb) x (Average Actual Hrs of Operation (Hr/Yr) / (2000 lb/ton)
Net Emissions Increase (TPY) = (Potential Stack Emission Rate (TPY)) - (Average Actual Emission Rate (TPY))

Potential Operating Schedule
20 hours/day
8760 hours/year

Chemical	CAS #	BH1 Dust Analysis Data mg/kg	Stack Emissions lb/hr	Stack Emissions tons/yr	
Antimony (Sb)	7440-36-0				
Arsenic (As)	7440-38-2	26.4	1.64E-04	7.19E-04	See Note 1, 2
Beryllium (Be)	7440-41-7				
Cadmium (Cd)	7440-43-9				
Chromium (Cr)	7440-47-3	40.8	2.36E-04	1.03E-03	See Note 1, 2
Cobalt (Co)	7440-48-4				
Lead (Pb)		744	4.30E-03	1.88E-02	See Note 1, 2
Manganese (Mn)	7439-96-5	0.006	3.47E-08	1.52E-07	See Note 3
Mercury (Hg)	7439-97-6				
Nickel (Ni)	7440-02-0				
Selenium (Se)	7782-49-2				
Total HAPs			4.70E-03	2.06E-02	

Notes:
[1] Other pouring and cooling HAP emissions are quantified with emissions unit.
[2] HAP content from Belmont Labs dated June 8, 2006
[3] National Emission Standards for Hazardous Air Pollutants (NESHAP) for Iron and Steel Foundries-
Background Information for Proposed Standards (EPA-453/R-02-013, December 2002)
(for inoculation only; s/o mn is with unit spreadsheet)

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Flow Diagram Designation

Baghouse 250.F4

This baghouse controls: BMM Sand Plant (F006)
BMM Shakeout (F016)
Sand Cooling Drum (F002)
BMM Pouring/Cooling (F010)

Process Description:

Baghouse 250.F4

Control Device:	Baghouse	
Control Device outlet grain loading (PM/PM-10):	0.0075 gr/dscf	
Air Flow:	90,000 acfm	70 °F
Settling Factor (inside) PM/PM-10	0 %	

Facility Process Name:		Criteria Pollutants						
	Baghouse 250.F4							
Emission Factor Basis:		PM	SOx	NOx	VOC	CO	PM10	Lead
Emission Factors:		N/A					N/A	
(source)								
Potential Stack Emission Rate:								
	Hourly (lb/hr)	5.79					5.79	
	Annual (TPY)	25.34					25.34	
Average Stack Emission Rate (Prev. 2 Yrs.):								
	Hourly (lb/hr)							
	Annual (TPY)							
Net Emissions Increase								
	Hourly (lb/hr)	5.79					5.79	
	Annual (TPY)	25.34					25.34	

SAMPLE CALCULATIONS:

Potential Stack Emission Rate (lb/hr) = (Baghouse CFM) x (grain loading (gr/dscf)) x (460+70)/(460+gas temp)) x (60 min/hr) / (7,000 gr/lb)

Potential Stack Emission Rate (TPY) = (Baghouse CFM) x (grain loading (gr/dscf)) x (460+70)/(460+gas temp))x (60 min/hr) / (7,000 gr/lb) x (Potential Hrs of Operation (Hr/Yr) / (2000 lb/ton)

Average Actual Stack Emission Rate (lb/hr) = (Baghouse CFM) x (grain loading (gr/dscf)) x (460+70)/(460+gas temp))x (60 min/hr) / (7,000 gr/lb)

Average Actual Stack Emission Rate (TPY) = (Baghouse CFM) x (grain loading (gr/dscf)) x (460+70)/(460+gas temp))x (60 min/hr) / (7,000 gr/lb) x (Average Actual Hrs of Operation (Hr/Yr) / (2000 lb/ton)

Net Emissions Increase (TPY) = (Potential Stack Emission Rate (TPY)) - (Average Actual Emission Rate (TPY))

Potential Operating Schedule

20 hours/day
8760 hours/year

	CAS #	BH1 Dust	Stack		
		Analysis Data	Emissions		
Chemical		mg/kg	lb/hr	tons/yr	
Antimony (Sb)	7440-36-0				
Arsenic (As)	7440-38-2	4.94	2.86E-05	1.25E-04	See Note 1, 2
Beryllium (Be)	7440-41-7				
Cadmium (Cd)	7440-43-9				
Chromium (Cr)	7440-47-3	6.38	3.68E-05	1.61E-04	See Note 1, 2
Cobalt (Co)	7440-48-4				
Lead (Pb)		15.6	9.03E-05	3.95E-04	See Note 1, 2
Manganese (Mn)	7439-96-5				
Mercury (Hg)	7439-97-6				
Nickel (Ni)	7440-02-0				
Selenium (Se)	7782-49-2				
Total HAPs			1.56E-04	6.82E-04	

Notes:

[1] Other pouring and cooling HAP emissions are quantified with emissions unit.

[2] HAP content from Belmont Labs dated June 8, 2006

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Flow Diagram Designation
Cupola (P901)

Potential Capacity
85.00 Tons/hour
275,000 TPY

Process Description:

Cupola (P901)
Control Device: Afterburner & Scrubber

Control Device outlet grain loading (PM/PM-10): 0.01 gr/dscf
Air Flow: 48,759 dscf
Settling Factor (inside) PM/PM-10 %

Facility Process Name:		Criteria Pollutants						
	Cupola (P901)							
Emission Factor Basis:		PM	SOx	NOx	VOC	CO	PM10	Lead
	lb/ton metal charged							
Emission Factors:		0.209	0.06	0.46	0.27	0.51	0.152	0.0004
(source)		Note 1	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7
Capture Efficiencies:		99.90	99.90	99.90	99.90	99.90	99.90	99.90
Potential Stack Emission Rate:								
	Hourly (lb/hr)	17.75	5.09	39.06	22.93	43.31	13.79	0.03
	Annual (TPY)	28.71	8.24	63.19	37.09	70.05	22.31	0.05
Average Stack Emission Rate (Previous 2 yrs):								
	Hourly (lb/hr)							
	Annual (TPY)							
Potential Fugitive Emission Rate:								
	Hourly (lb/hr)	0.02	0.01	0.04	0.02	0.04	0.01	0.00
	Annual (TPY)	0.03	0.01	0.06	0.04	0.07	0.02	0.00
Average Fugitive Emission Rate (Previous 2 yrs):								
	Hourly (lb/hr)							
	Annual (TPY)							
Net Emissions Increase								
	Hourly (lb/hr)	17.77	5.10	39.10	22.95	43.35	13.80	0.03
	Annual (TPY)	28.74	8.25	63.25	37.13	70.13	22.33	0.06

Maximum Operating Schedule
7300 Hr/Yr
20 Hr/Day

Note 1: Clow 1998 Cupola Stack Test plus 100% safety factor
Note 2: Emissions Factor represents Atlantic States baghouse for safety factor purposes.
Note 3: Atlantic States Stack Test (February 1990), Run 1, at 45 tph melt rate.
Note 4: Stack Testing Performed by United States Pipe & Foundry Company (Burlington, NJ Site) (August 1991), Method 25A as propane
Note 5: Atlantic States Stack Test (December 1989), Average Emission Factor + 70% safety factor.
Note 6: AP-42 Table 12.10-8 (77.7% of particulate is less than 10 microns).
Note 7: Stack Testing Performed by United States Pipe & Foundry Company (Burlington, NJ Site) (August 1991) + 50% safety factor.

SAMPLE CALCULATIONS:
Potential Stack Emission Rate (TPY) = (Potential Capacity (TPY)) x (Emission Factor (lb/ton)) x (Capture Efficiency/100) / (2000 lb/ton)
Potential Fugitive Emission Rate (TPY) = (Potential Capacity (TPY) x (Emission Factor (lb/ton)) x (1-(Capture Efficiency/100)) / (2000 lb/ton)
Average Actual Stack Emission Rate (TPY) = (Average Actual Capacity (TPY)) x (Emission Factor (lb/ton)) x (Capture Efficiency/100) / (2000 lb/ton)
Average Actual Fugitive Emission Rate (TPY) = (Average Actual Capacity (TPY) x (Emission Factor (lb/ton)) x (1-(Capture Efficiency/100)) / (2000 lb/ton)
Total Potential Emission Rate (TPY) = (Potential Stack Emission Rate (TPY)) + (Potential Fugitive Emission Rate (TPY))
Total Average Actual Emission Rate (TPY) = (Average Actual Stack Emission Rate (TPY)) + (Average Actual Fugitive Emission Rate (TPY))
Net Emissions Increase (TPY) = (Total Potential Emission Rate (TPY)) - (Total Average Actual Emission Rate (TPY))

	CAS #	BH Dust	Stack		Fugitive		Total		
		Analysis Data	Emissions		Emissions		Emissions		
Chemical		mg/kg	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	
Antimony (Sb)	7440-36-0								
Arsenic (As)	7440-38-2	8	1.42E-04	2.30E-04	1.42E-07	2.30E-07	1.42E-04	2.30E-04	Note 1
Beryllium (Be)	7440-41-7								
Cadmium (Cd)	7440-43-9	177	3.14E-03	5.09E-03	3.14E-06	5.09E-06	3.14E-03	5.09E-03	Note 1
Chromium (Cr)	7440-47-3	82.6	1.47E-03	2.37E-03	1.47E-06	2.37E-06	1.47E-03	2.37E-03	Note 1
Cobalt (Co)	7440-48-4								
Lead (Pb)		5440	9.66E-02	1.56E-01	9.66E-05	1.56E-04	9.66E-02	1.56E-01	Note 1
Manganese (Mn)	7439-96-5	73000	1.30E+00	2.10E+00	1.30E-03	2.10E-03	1.30E+00	2.10E+00	Note 2
Mercury (Hg)	7439-97-6								
Nickel (Ni)	7440-02-0								
Selenium (Se)	7782-49-2								
Total HAPs			1.40E+00	2.26E+00	1.40E-03	2.26E-03	1.40E+00	2.26E+00	

Notes:
[1]HAP content from Belmont Labs dated June 6, 2005
[2]HAP Metal content of iron based on EPA source test at GM (EPA, 1998b) for cupola melting furnace with wet scrubber.

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Flow Diagram Designation
Desulfurization and Inoculation (F004)

Potential Capacity
85.00 Tons/hour
275,000 TPY

Process Description:

Desulfurization and Inoculation (F004)
Control Device: Baghouse

Control Device outlet grain loading (PM/PM-10): See 250.F3 gr/dscf
Air Flow: See 250.F3 acfm
Settling Factor (inside) PM/PM-10 %

Facility Process Name:		Hazardous Air Pollutants				
Desulfurization and Inoculation (F004						
	HAPs	Emission Factor (% of PM)	HAP Capture Efficiency	Fugitive Emissions (lbs/hr)	Fugitive Emissions (tons/yr)	
	Antimony (Sb)					
	Arsenic (As)					
	Beryllium (Be)					
	Cadmium (Cd)					
	Chromium (Cr)					
	Cobalt (Co)					
	Lead (Pb)	0.1%	99%	1.06E-03	1.72E-03	Note 1,2
	Manganese (Mn)	0.6%	99%	6.38E-03	1.03E-02	Note 1,2
	Mercury (Hg)					
	Nickel (Ni)					
	Selenium (Se)					
	Total HAPs			7.44E-03	1.20E-02	

Note 1: National Emission Standards for Hazardous Air Pollutants (NESHAP) for Iron and Steel Foundries-
Background Information for Proposed Standards (EPA-453/R-02-013, December 2002)
Note 2: Stack emissions are quantified with baghouse.

SAMPLE CALCULATIONS:
Potential Stack Emission Rate (TPY) = (Potential Capacity (TPY)) x (Emission Factor (lb/ton)) x (Capture Efficiency/100) / (2000 lbton)
Potential Fugitive Emission Rate (TPY) = (Potential Capacity (TPY) x (Emission Factor (lb/ton)) x (1-(Capture Efficiency/100)) / (2000 lb/ton)
Average Actual Stack Emission Rate (TPY) = (Average Actual Capacity (TPY)) x (Emission Factor (lb/ton)) x (Capture Efficiency/100) / (2000 lbton)
Average Actual Fugitive Emission Rate (TPY) = (Average Actual Capacity (TPY) x (Emission Factor (lb/ton)) x (1-(Capture Efficiency/100)) / (2000 lb/ton)
Total Potential Emission Rate (TPY) = (Potential Stack Emission Rate (TPY)) + (Potential Fugitive Emission Rate (TPY))
Total Average Actual Emission Rate (TPY) = (Average Actual Stack Emission Rate (TPY)) + (Average Actual Fugitive Emission Rate (TPY))
Net Emissions Increase (TPY) = (Total Potential Emission Rate (TPY)) - (Total Average Actual Emission Rate (TPY))

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Clow Water Systems

HAP Emission Estimates from Pipe Casting Machines

Pipe Casting Machines #1-#6 (F018)

275,000 = Maximum Annual Production (Tons/yr)

Metal HAP's	CAS #	HAP Emission Factor lb/ton	Emissions Factor Basis	Maximum Emissions tons/yr
Cadmium (Cd)	7440-43-9	4.16E-05	Note 1	5.72E-03
Chromium (Cr)	7440-47-3	4.51E-04	Note 1	6.20E-02
Lead (Pb)	7439-92-1	4.74E-04	Note 1	6.52E-02
Manganese (Mn)	7439-96-5	1.70E-03	Note 1	2.34E-01
Selenium (Se)	7782-49-2	4.10E-06	Note 1	5.64E-04
Phenol	108-95-2	4.70E-03	Note 2	6.46E-01
Benzene	71-42-2	1.34E-02	Note 2	1.84E+00
Aniline	62-53-3	0.00E+00	Note 2	0.00E+00
2-Methylnaphthalene	91-57-6	0.00E+00	Note 2	0.00E+00
o-Cresol	95-48-7	0.00E+00	Note 2	0.00E+00
Naphthalene	91-20-3	0.00E+00	Note 2	0.00E+00
N,N-Dimethylaniline	N/A	3.00E-04	Note 2	4.13E-02
1-Methylnaphthalene	N/A	0.00E+00	Note 2	0.00E+00
Toluene	108-88-3	5.70E-03	Note 2	7.84E-01
1,3-Dimethylnaphthalene	N/A	0.00E+00	Note 2	0.00E+00
m,p-Cresol	N/A	4.20E-03	Note 2	5.78E-01
o,m,p-Xylene	1330-20-7	2.60E-03	Note 2	3.58E-01
Acetaldehyde	75-07-0	3.00E-04	Note 2	4.13E-02
Hexane	110-54-3	3.00E-04	Note 2	4.13E-02
Other HAPs	N/A	5.00E-04	Note 2	6.88E-02
Total HAPS				4.77E+00

Notes:
[1]From Foundry Process Emission Factors: Baseline Emissions from Automotive Foundries in Mexico
[2]From CERP Emission Test 1410-177 FU, Shell Cores, 9/1/04.

Clow Water Systems

Metal HAP Emission Estimates from Pouring/Cooling Operations

Jolt Pouring and Cooling (F009)

15,000 = Maximum Annual Production (Tons/yr)
0% = Capture Efficiency
0% = Control Efficiency

Metal HAP's	CAS #	Pouring Emission Factor lb/ton	Cooling Emission Factor lb/ton	Emissions Factor Basis	Controls	Maximum Emissions tons/yr
Antimony (Sb)	7440-36-0	0.00E+00	6.21E-05	Note 1	Dust Collectors	4.66E-04
Arsenic (As)	7440-38-2	1.14E-05	0.00E+00	Note 1	Dust Collectors	8.55E-05
Beryllium (Be)	7440-41-7	0.00E+00	0.00E+00	Note 1	Dust Collectors	0.00E+00
Cadmium (Cd)	7440-43-9	8.81E-06	4.37E-05	Note 1	Dust Collectors	3.94E-04
Chromium (Cr)	7440-47-3	6.72E-05	3.12E-04	Note 1	Dust Collectors	2.84E-03
Cobalt (Co)	7440-48-4	5.13E-03	1.72E-04	Note 1	Dust Collectors	3.98E-02
Lead (Pb)	7439-92-1	2.41E-04	4.79E-04	Note 1	Dust Collectors	5.40E-03
Manganese (Mn)	7439-96-5	2.04E-03	1.12E-03	Note 1	Dust Collectors	2.37E-02
Nickel (Ni)	7440-02-0	3.76E-04	4.32E-04	Note 1	Dust Collectors	6.06E-03
Selenium (Se)	7782-49-2	0.00E+00	2.46E-05	Note 1	Dust Collectors	1.85E-04
Total HAPS						7.89E-02

Notes:
[1]From Foundry Process Emission Factors: Baseline Emissions from Automotive Foundries in Mexico, Table 5.12

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Flow Diagram Designation	Potential Capacity
Jolt Pouring Cooling and Shakeout	6.00 tph
	15,000 TPY

Process Description:

Jolt Pouring Cooling and Shakeout
Control Device:
SCC Code:
Control Device Outlet: gr/dscf
Airflow: acfm
Stack Gas Temperature: °F

Emission Factor Process Variables - Tested v. Actual Process Variables	Tested	Actual	
1. P/C/S Emissions from Green Sand Molds			See Note 1
Loss on Ignition	4.97%	4.3%	
2. P/C/S Emissions from Core			See Note 2, 3
Binder Level	1.75%	1.20%	
Core Type	Isocure	Isocure, Pepset	

	Tested Emission Factors					Facility Specific Emission Factors			Emissions	
Analyte	Greensand Mold Emission Factor (lbs/ton)	Emission Factor Reference	Core Emission Factor (lbs/ton)	Emission Factor Reference	Combined Green Sand and Core Emission Factor (lbs/ton)	Greensand Mold Emission Factor (lbs/ton)	Core Emission Factor (lbs/ton)	Combined Green Sand and Core Emission Factor (lbs/ton)	(lbs/hr)	(TPY)
1,3-Dimethylnaphthalene			0.0010	Note 2	0.0010		0.0007	0.0007	0.00	5.14E-03
1,6-Demethylnaphthalene			0.0023	Note 2	0.0023		0.0016	0.0016	0.01	1.18E-02
1-Methylnaphthalene										
2,6-Demethylnaphthalene										
2,7-Demethylnaphthalene			0.0041	Note 2	0.0041		0.0028	0.0028	0.02	2.11E-02
2-Methylnaphthalene	0.0059	Note 1	0.0065	Note 2	0.0124	0.0051	0.0045	0.0096	0.06	7.17E-02
Acetaldehyde			0.0521	Note 2	0.0521		0.0357	0.0357	0.21	2.68E-01
Aniline	0.1051	Note 1	0.0955	Note 2	0.2006	0.0909	0.0655	0.1564	0.94	1.17E+00
Benzene	0.0068	Note 1	0.0011	Note 2	0.0079	0.0059	0.0007	0.0066	0.04	4.96E-02
Ethylbenzene			0.0016	Note 2	0.0016		0.0011	0.0011	0.01	7.97E-03
Formaldehyde			0.0066	Note 2	0.0066		0.0045	0.0045	0.03	3.39E-02
Hexane			0.0084	Note 2	0.0084		0.0058	0.0058	0.03	4.32E-02
m,p-Cresol			0.0063	Note 2	0.0063		0.0043	0.0043	0.03	3.24E-02
m,p-Xylene			0.0121	Note 2	0.0121		0.0083	0.0083	0.05	6.22E-02
N,N-Dimethylaniline			0.0068	Note 2	0.0068		0.0047	0.0047	0.03	3.50E-02
Naphthalene			0.0264	Note 2	0.0264		0.0181	0.0181	0.11	1.36E-01
o-Cresol			0.0015	Note 2	0.0015		0.0010	0.0010	0.01	7.66E-03
o-xylene	0.0403	Note 1			0.0403	0.0349		0.0349	0.21	2.62E-01
Xylene			0.1022	Note 2	0.1022		0.0701	0.0701	0.42	5.26E-01
Phenol			0.0004		0.0004		0.0003	0.0003	0.00	2.06E-03
Propionaldehyde			0.0010		0.0010		0.0007	0.0007	0.00	5.25E-03
Styrene	0.0547	Note 1	0.0201	Note 2	0.0748	0.0473	0.0138	0.0611	0.37	4.58E-01
Toluene										
Total HAPs	0.1581		0.3559		0.5140	0.1841	0.2441	0.4282	2.57	3.21E+00

Note 1: Process variables and emission rates obtained from Casting Emission Reduction Program (CERP) Emissions Report 1256-1311DQ
Note 2: Process variables and emission rates obtained from Casting Emission Reduction Program (CERP) Emissions Report 1256-11GSA.3 CM
Note 3: All cores are assumed to be PUCB.

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Clow Water Systems

Metal HAP Emission Estimates from Shakeout Operations

Jolt Shakeout (F007)

15,000 = Maximum Annual Production (Tons/yr)
99% = Capture Efficiency
95% = Control Efficiency

Metal HAP's	CAS #	Emission Factor lb/ton	Emissions Factor Basis	Controls	Maximum Emissions tons/yr	
Antimony (Sb)	7440-36-0	7.59E-06	Note 1	Fabric Filter	3.39E-06	Stack + fugitive
Arsenic (As)	7440-38-2	0.00E+00	Note 1,2	Fabric Filter	0.00E+00	fugitve
Beryllium (Be)	7440-41-7	0.00E+00	Note 1	Fabric Filter	0.00E+00	Stack + fugitive
Cadmium (Cd)	7440-43-9	3.21E-05	Note 1	Fabric Filter	1.43E-05	Stack + fugitive
Chromium (Cr)	7440-47-3	3.00E-04	Note 1,2	Fabric Filter	2.25E-05	fugitve
Cobalt (Co)	7440-48-4	2.49E-04	Note 1	Fabric Filter	1.11E-04	Stack + fugitive
Lead (Pb)	7439-92-1	1.26E-04	Note 1,2	Fabric Filter	9.45E-06	fugitve
Manganese (Mn)	7439-96-5	7.47E-04	Note 1	Fabric Filter	3.33E-04	Stack + fugitive
Nickel (Ni)	7440-02-0	6.66E-04	Note 1	Fabric Filter	2.97E-04	Stack + fugitive
Selenium (Se)	7782-49-2	0.00E+00	Note 1	Fabric Filter	0.00E+00	Stack + fugitive
Total HAPS					7.91E-04	

Notes:
[1]From Foundry Process Emission Factors: Baseline Emissions from Automotive Foundries in Mexico, Table 5.12
[2]Stack emissions quantified with 250.F3

Clow Water Systems

Metal HAP Emission Estimates from Pouring/Cooling Operations

BMM Pouring and Cooling (F010)

20,000 = Maximum Annual Production (Tons/yr)
0% =Pouring Capture Efficiency
0% =Pouring Control Efficiency

99% = Cooling Capture Efficiency
95% = Cooling Control Efficiency

Metal HAP's	CAS #	Pouring Emission Factor lb/ton	Cooling Emission Factor lb/ton	Emissions Factor Basis	Controls	Maximum Emissions tons/yr	
Antimony (Sb)	7440-36-0	0.000000	0.000062	Note 1	Baghouse	3.69E-05	stack + fugitive
Arsenic (As)	7440-38-2	0.000011		Note 1,2	Baghouse	1.14E-04	fugitive
Beryllium (Be)	7440-41-7	0.000000	0.000000	Note 1	Baghouse	0.00E+00	stack + fugitive
Cadmium (Cd)	7440-43-9	0.000009	0.000044	Note 1	Baghouse	1.14E-04	stack + fugitive
Chromium (Cr)	7440-47-3	0.000067		Note 1,2	Baghouse	6.72E-04	fugitive
Cobalt (Co)	7440-48-4	0.005130	0.000172	Note 1	Baghouse	5.14E-02	stack + fugitive
Lead (Pb)	7439-92-1	0.000241		Note 1,2	Baghouse	2.41E-03	fugitive
Manganese (Mn)	7439-96-5	0.002040	0.001120	Note 1	Baghouse	2.11E-02	stack + fugitive
Nickel (Ni)	7440-02-0	0.000376	0.000432	Note 1	Baghouse	4.02E-03	stack + fugitive
Selenium (Se)	7782-49-2	0.000000	0.000025	Note 1	Baghouse	1.46E-05	stack + fugitive
Total HAPS						7.98E-02	

Notes:
[1]From Foundry Process Emission Factors: Baseline Emissions from Automotive Foundries in Mexico, Table 5.12
[2]See 250F.4 Spreadesheet for pollutant cooling emissions.

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Flow Diagram Designation: BMM Pouring Cooling and Shakeout

Potential Capacity: 7.50 tph; 20,000 TPY

Process Description:

BMM Pouring Cooling and Shakeout
Control Device:
SCC Code:
Control Device Outlet: gr/dscf
Airflow: acfm
Stack Gas Temperature: °F

Emission Factor Process Variables - Tested v. Actual Process Variables				
		Tested	Actual	
1. P/C/S Emissions from Green Sand Molds				See Note 1
	Pouring Temperature			
	Loss on Ignition	4.97%	5.0%	
2. P/C/S Emissions from Core				See Note 2, 3
	Binder Level	1.75%	1.20%	
	Core Type	Isocure	Isocure, Pepset	

	Tested Emission Factors					Facility Specific Emission Factors			Emissions	
Analyte	Greensand Mold Emissions (lbs/ton)	Emission Factor Reference	Core Emissions (lbs/ton)	Emission Factor Reference	Combined Emissions (lbs/ton)	Greensand Mold Emissions (lbs/ton)	Core Emissions (lbs/ton)	Combined Emissions (lbs/ton)	(lbs/hr)	(TPY)
1,3-Dimethylnaphthalene			0.0010	Note 2	0.0010		0.0007	0.0007	0.01	5.86E-03
1,6-Demethylnaphthalene					0.0000					
1-Methylnaphthalene			0.0023	Note 2	0.0023		0.0016	0.0016	0.01	1.58E-02
2,6-Demethylnaphthalene					0.0000					
2,7-Demethylnaphthalene					0.0000					
2-Methylnaphthalene			0.0041	Note 2	0.0041	0.0059	0.0028	0.0028	0.02	2.81E-02
Acetaldehyde	0.0059	Note 1	0.0065	Note 2	0.0124		0.0045	0.0104	0.08	1.04E-01
Analine			0.0521	Note 2	0.0521	0.1057	0.0357	0.0357	0.27	3.57E-01
Benzene	0.1051	Note 1	0.0955	Note 2	0.2006	0.0068	0.0655	0.1712	1.28	1.71E+00
Ethylbenzene	0.0068	Note 1	0.0011	Note 2	0.0079		0.0007	0.0076	0.06	7.57E-02
Formaldehyde			0.0016	Note 2	0.0016		0.0011	0.0011	0.01	1.06E-02
Hexane			0.0066	Note 2	0.0066		0.0045	0.0045	0.03	4.53E-02
m,p-Cresol			0.0084	Note 2	0.0084		0.0058	0.0058	0.04	5.76E-02
m,p-Xylene			0.0063	Note 2	0.0063		0.0043	0.0043	0.03	4.32E-02
N,N-Dimethylaniline			0.0121	Note 2	0.0121		0.0083	0.0083	0.06	8.30E-02
Naphthalene			0.0068	Note 2	0.0068		0.0047	0.0047	0.03	4.66E-02
o-Cresol			0.0264	Note 2	0.0264		0.0181	0.0181	0.14	1.81E-01
o-xylene			0.0015	Note 2	0.0015	0.0405	0.0010	0.0010	0.01	1.02E-02
Xylene	0.0403	Note 1			0.0403			0.0405	0.30	4.05E-01
Phenol			0.1022	Note 2	0.1022		0.0701	0.0701	0.53	7.01E-01
Propionaldehyde			0.0004		0.0004		0.0003	0.0003	0.00	2.75E-03
Styrene			0.0010		0.0010	0.0550	0.0007	0.0007	0.01	6.99E-03
Toluene	0.0547	Note 1	0.0201	Note 2	0.0748		0.0138	0.0688	0.52	6.88E-01
Total HAPs	0.1581		0.3559		0.5140	0.2141	0.2441	0.4582	2.91	4.58E+00

Note 1: Process variables and emission rates obtained from Casting Emission Reduction Program (CERP) Emissions Report 1256-1311DQ
Note 2: Process variables and emission rates obtained from Casting Emission Reduction Program (CERP) Emissions Report 1256-11GSA.3 CM
Note 3: All cores are assumed to be PUCB.

Clow Water Systems

Metal HAP Emission Estimates from Pouring/Cooling Operations

BMM Shakeout (F016)

20,000 = Maximum Annual Production (Tons/yr)
99% = Capture Efficiency
95% = Control Efficiency

Metal HAP's	CAS #	Emission Factor lb/ton	Emissions Factor Basis	Controls	Maximum Emissions tons/yr	
Antimony (Sb)	7440-36-0	7.59E-06	Note 2	Dust Collectors	4.52E-06	stack+fugitive
Arsenic (As)	7440-38-2	0.00E+00	Note 2	Dust Collectors	0.00E+00	fugitive
Beryllium (Be)	7440-41-7	0.00E+00	Note 2	Dust Collectors	0.00E+00	stack+fugitive
Cadmium (Cd)	7440-43-9	3.21E-05	Note 2	Dust Collectors	1.91E-05	stack+fugitive
Chromium (Cr)	7440-47-3	3.00E-04	Note 2	Dust Collectors	3.00E-05	fugitive
Cobalt (Co)	7440-48-4	2.49E-04	Note 2	Dust Collectors	1.48E-04	stack+fugitive
Lead (Pb)	7439-92-1	1.26E-04	Note 2	Dust Collectors	1.26E-05	fugitive
Manganese (Mn)	7439-96-5	7.47E-04	Note 2	Dust Collectors	4.44E-04	stack+fugitive
Nickel (Ni)	7440-02-0	6.66E-04	Note 2	Dust Collectors	3.96E-04	stack+fugitive
Selenium (Se)	7782-49-2	0.00E+00	Note 2	Dust Collectors	0.00E+00	stack+fugitive
Total HAPS					1.06E-03	

Notes:
[1]From Foundry Process Emission Factors: Baseline Emissions from Automotive Foundries in Mexico, Table 5.12

Clow Water Systems

Metal HAP Emission Estimates from Pouring/Cooling Operations

Main Floor Pouring and Cooling (Z129)

1,000 = Maximum Annual Production (Tons/yr)
0% = Capture Efficiency
0% = Control Efficiency

Metal HAP's	CAS #	Pouring Emission Factor lb/ton	Cooling Emission Factor lb/ton	Emissions Factor Basis	Controls	Maximum Emissions tons/yr
Antimony (Sb)	7440-36-0	0.00E+00	6.21E-05	Note 2	Dust Collectors	3.11E-05
Arsenic (As)	7440-38-2	1.14E-05	0.00E+00	Note 2	Dust Collectors	5.70E-06
Beryllium (Be)	7440-41-7	0.00E+00	0.00E+00	Note 2	Dust Collectors	0.00E+00
Cadmium (Cd)	7440-43-9	8.81E-06	4.37E-05	Note 2	Dust Collectors	2.63E-05
Chromium (Cr)	7440-47-3	6.72E-05	3.12E-04	Note 2	Dust Collectors	1.90E-04
Cobalt (Co)	7440-48-4	5.13E-03	1.72E-04	Note 2	Dust Collectors	2.65E-03
Lead (Pb)	7439-92-1	2.41E-04	4.79E-04	Note 2	Dust Collectors	3.60E-04
Manganese (Mn)	7439-96-5	2.04E-03	1.12E-03	Note 2	Dust Collectors	1.58E-03
Mercury (Hg)	7439-97-6	0.00E+00	0.00E+00	Note 1	Dust Collectors	0.00E+00
Nickel (Ni)	7440-02-0	3.76E-04	4.32E-04	Note 2	Dust Collectors	4.04E-04
Selenium (Se)	7782-49-2	0.00E+00	2.46E-05	Note 2	Dust Collectors	1.23E-05
Total HAPS						5.26E-03

Notes:
[1] Emission factors from stack test data
[2] Emission Factors from Table 5.12

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Clow Water Systems

Organic HAP Emission Estimates from Pouring and Cooling Operations

Main Floor Pouring and Cooling (Z129)

7 = Maximum Daily Production (Tons/day)
1,000 =Maximum Annual Production (Tons/year)

Organic HAP's	Emission Factor lb/ton	Emissions Factor Basis	Maximum Emissions tons/yr
Phenol	0.618	Note 1	3.09E-01
o,m,p Cresol	0.026	Note 1	1.30E-02
Benzene	0.029	Note 1	1.45E-02
Dimethylnaphtalenes	0.003	Note 1	1.50E-03
Toluene	0.048	Note 1	2.40E-02
o,m,p, Xylene	0.033	Note 1	1.65E-02
Formaldehyde	0.024	Note 1	1.20E-02
Naphthalene	0.28	Note 1	1.40E-01
Total HAPS			5.31E-01

Notes:
[1] Emission factors from stack test data, includes s/o.

Clow Water Systems

Metal HAP Emission Estimates from Pouring/Cooling Operations

Main Floor Shakeout (Z024)

1,000 = Maximum Annual Production (Tons/yr)
0% = Capture Efficiency
0% = Control Efficiency

Metal HAP's	CAS #	Emission Factor lb/ton	Emissions Factor Basis	Controls	Maximum Emissions tons/yr
Antimony (Sb)	7440-36-0	7.59E-06	Note 2	Dust Collectors	3.80E-06
Arsenic (As)	7440-38-2	0.00E+00	Note 2	Dust Collectors	0.00E+00
Beryllium (Be)	7440-41-7	0.00E+00	Note 2	Dust Collectors	0.00E+00
Cadmium (Cd)	7440-43-9	3.21E-05	Note 2	Dust Collectors	1.61E-05
Chromium (Cr)	7440-47-3	3.00E-04	Note 2	Dust Collectors	1.50E-04
Cobalt (Co)	7440-48-4	2.49E-04	Note 2	Dust Collectors	1.25E-04
Lead (Pb)	.7439-92-1	1.26E-04	Note 2	Dust Collectors	6.30E-05
Manganese (Mn)	7439-96-5	7.47E-04	Note 2	Dust Collectors	3.74E-04
Nickel (Ni)	7440-02-0	6.66E-04	Note 2	Dust Collectors	3.33E-04
Selenium (Se)	7782-49-2	0.00E+00	Note 2	Dust Collectors	0.00E+00
Total HAPS					1.06E-03

Notes:
[1]From Foundry Process Emission Factors: Baseline Emissions from Automotive Foundries in Mexico, Table 5.12

Clow Water Systems

Fugitive Metal HAP Emission Estimates from Shotblaster

Foundry Shotblast (F015)

99.9% = Capture Efficiency

15.50 = PM Emission Factor (lb/ton iron) - Bernard S. Gutow Article, Modern Castings, January 1972

36,000 = Maximum Annual Production (Tons/yr)

EIF's Maximum Emission Rate of Particulates		0.28	TPY
HAP pollutant	**CAS #**	**% of Metal Content ***	**Maximum Fugitive Emissions**** tons/yr
Chromium	7440-47-3	0.9	2.51E-03
Manganese	7439-96-5	1.1	3.07E-03
Nickel	7440-02-0	1.5	4.18E-03
		Total HAPs	9.76E-03

* HAP Metal content of iron based on MSDS (maximum of range selected).
** Captured emissions are ducted to and included with the baghouse.

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Laempe Coremaking (F014) VOC & HAPs

3.00 = Potential Capacity (Tons core/hr)
26,280 =Potential Capacity (Tons cores/yr)

1%	% resin usage (of sand)	OCMA/AFS study
4%	% catalyst uage (of resin)	Delta
48.0%	% by weight Part I	
48.0%	% by weight Part II	

VOCS AND HAPS	CAS #	% by Weight	Basis	Control Efficiency %	Emission Factor lb/ton	Emissions Factor Basis	Potential Emissions lb/hr	Potential Emissions tons/yr	Average Emissions lb/hr	Average Emissions tons/yr	Net Emissions Increase lb/hr	Net Emissions Increase tons/yr
Total VOCs					0.68	OCMA/AFS Study (1997)	2.040	8.94	-	-	2.040	8.94E+00
Part 1												
Phenol	108-95-2	6.40%	24-811 Technikure Resin Part I MSDS		0.02	VOC E.F. x (Part content/100) x (HAP by weight/100)	0.06	0.27	-	-	0.063	2.74E-01
Naphthalene*	91-20-3	3.00%	24-811 Technikure Resin Part I MSDS		0.0098	VOC E.F. x (Part content/100) x (HAP by weight/100)	0.03	0.13	-	-	0.029	1.29E-01
Part 2												
Methylene bis (phenylisocyanate) [MDI]*	101-68-8	42.00%	23-221 Technikure Coreactant Part II MSDS		-	Form R- Reporting of Binder Chemical Used in Foundries **	-	-	-	-	-	0.00E+00
Naphthalene*	91-20-3	2.20%	23-221 Technikure Coreactant Part II MSDS		0.0072	VOC E.F. x (Part content/100) x (HAP by weight/100)	0.02	0.09	-	-	0.022	9.44E-02

Note 1: Clow has replaced catalyst (TEA) that was a HAP with a non-HAP.

* - Indicates compound is a Polycylic Organic Matter (POM)
** - Form R Reporting of Binder Chemicals Used in Foundries indicates that for PUCB Chemical #2, that MDI present 99.99% is reacted and 0.01% remains in the core. None is emitted. It is assumed that what remains in the core will be released and counted in the Pouring & Cooling emissions.

SAMPLE CALCULATIONS:
Potential Emission Rate (lb/hr) =(Potential Hourly Production T/Hr) x (Emission factor (lb/ton))
Potential Emission Rate (TPY) =(Potential Annual Production T/Yr) x (Emission factor (lb/ton)) / (2000 lb/ton)
Average Actual Emission Rate (lb/hr) =(Average Actual Hourly Production T/Hr) x (Emission factor (lb/ton))
Average Actual Emission Rate (TPY) =(Average Actual Annual Production T/Yr) x (Emission factor (lb/ton)) / (2000 lb/ton)
Net Emissions Increase (TPY) = (Potential Emission Rate (TPY)) - (Average Actual Emission Rate (TPY))

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Large PUNB Mold/Core Making (F005) (VOCs/HAPs)

22.5 =Potential Capacity (Tons core/hr)
12,500.0 = Potential Capacity (Tons cores/yr)

1.2% % resin usage (of sand)
6% % catalyst usage (of resin)
57.0% % by weight Part I
43.0% % by weight Part II

VOCS AND HAPS	CAS #	Control Efficiency (Resin Application) % by Weight	Basis	Control Efficiency %	Emission Factor lb/ton	Emissions Factor Basis	Potential Emissions lb/hr	Potential Emissions tons/yr	Average Emissions lb/hr	Average Emissions tons/yr	Net Emissions Increase lb/hr	Net Emissions Increase tons/yr
Total VOCs					1.44	Note 1	32.338	8.98	-	-	32.338	8.98E+00
Part 1											-	0.00E+00
Phenol	108-95-2	10.00%	MSDS		-	Note 2					0.9003	2.50E-01
Natphthalene	91-20-3	5.00%	MSDS		0.04001	Note 2	0.9003	0.2501				
Part 2											-	0.00E+00
MDI	9016-87-9	55.00%	MSDS		-	Note 2	-	-			-	0.00E+00
Methylene Diphenylisocyanate	101-68-8	25.00%	MSDS		-	Note 2	-	-			0.6792	1.89E-01
Natphthalene	91-20-3	5.00%	MSDS		0.03019	Note 2	0.6792	0.1887				
Catalyst											1.6200	4.50E-01
Xylene	1330-20-7	5.00%	MSDS		0.07200	N/A	1.6200	0.4500			0.1620	4.50E-02
Ethylbenzene	100-41-4	0.50%	MSDS		0.00720	N/A	0.1620	0.0450				

Note 1: Ashland Data based on OCMA weight loss method (Pepset XI1000/XI2000 with catalyst 3550)
Note 2: Form R: Reporting of Binder Chemicals Used in Foundries

SAMPLE CALCULATIONS:
Potential Emission Rate (lb/hr) =(Potential Hourly Production T/Hr) x (weight percent) x (2000 lb/ton)
Potential Emission Rate (TPY) =(Potential Annual Production TPY) x (weight percent)
Average Actual Emission Rate (lb/hr) =(Average Actual Hourly Production T/Hr) x (weight percent) x (2000 lb/ton)
Average Actual Emission Rate (TPY) =(Average Actual Annual Production TPY) x (weight percent)
Net Emissions Increase (TPY) = (Potential Emission Rate (TPY)) - (Average Actual Emission Rate (TPY))

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Small PUNB Core/Mold Making F022 (VOCs/HAPs)

10.20 =Potential Capacity (Tons core/hr)
17,870.0 = Potential Capacity (Tons cores/yr)

1.2% % resin usage (of sand)
6.0% % catalyst usage (of resin)
57.0% % by weight Part I
43.0% % by weight Part II

VOCS AND HAPS	Control Efficiency (Resin Application)											
	CAS #	% by Weight	Basis	Control Efficiency %	Emission Factor lb/ton	Emissions Factor Basis	Potential Emissions lb/hr	Potential Emissions tons/yr	Average Emissions lb/hr	Average Emissions tons/yr	Net Emissions Increase lb/hr	Net Emissions Increase tons/yr
Total VOCs					1.44	Note 1	14.660	12.84	-	-	14.660	1.28E+01
Part 1											-	0.00E+00
Phenol	108-95-2	10.00%	MSDS		-	Note 2					0.4081	3.58E-01
Natphthalene	91-20-3	5.00%	MSDS		0.04001	Note 2	0.4081	0.3575				
Part 2											-	0.00E+00
MDI	9016-87-9	55.00%	MSDS		-	Note 2	-	-			-	0.00E+00
Methylene Dipheyldisocyanate	101-68-8	25.00%	MSDS		-	Note 2	-	-			0.3079	2.70E-01
Natphthalene	91-20-3	5.00%	MSDS		0.03019	Note 2	0.3079	0.2697				
Catalyst											0.7344	6.43E-01
Xylene	1330-20-7	5.00%	MSDS		0.07200	N/A	0.7344	0.6433			0.0734	6.43E-02
Ethylbenzene	100-41-4	0.50%	MSDS		0.00720	N/A	0.0734	0.0643				

Note 1: Ashland Data based on OCMA weight loss method (Pepset XI1000/XI2000 with catalyst 3550)
Note 2: Form R: Reporting of Binder Chemicals Used in Foundries

SAMPLE CALCULATIONS:
Potential Emission Rate (lb/hr) =(Potential Hourly Production T/Hr) x (weight percent) x (2000 lb/ton)
Potential Emission Rate (TPY) =(Potential Annual Production TPY) x (weight percent)
Average Actual Emission Rate (lb/hr) =(Average Actual Hourly Production T/Hr) x (weight percent) x (2000 lb/ton)
Average Actual Emission Rate (TPY) =(Average Actual Annual Production TPY) x (weight percent)
Net Emissions Increase (TPY) = (Potential Emission Rate (TPY)) - (Average Actual Emission Rate (TPY))

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Flow Diagram Designation

Fittings Painting (K002)

	Potential Capacity	
Coating #1	1,400	Gal/yr
	1	Gal/hr
Solvent	187	Gal/yr
	1	Gal/hr

Process Description:

Fittings Painting (K002)

Control Device:	N/A	
Control Device outlet grain loading (PM/PM-10):	N/A	gr/dscf
Air Flow:	N/A	acfm
Settling Factor (Inside) PM/PM-10	N/A	%

Potential HAP Emissions	HAP	% wt.	Weight by Volume (lb/gal)	Paint Ratio		Lb/yr	Ton/yr
						Gal/yr	
Tnemec N140-1211A	Xylene	10.57%	13.94	50.00%		1,031.17	5.16E-01
Tnemec N140-0140B	Xylene	12.27%	11.62	50.00%		998.20	4.99E-01
	Ethyl Benzene	1.37%	11.62	50.00%		111.45	5.57E-02
	Methyl Isobutyl Ketone	4.07%	11.62	50.00%		331.11	1.66E-01
						TOTAL	1.24E+00
Tnemec N140-1255A	Xylene	10.25%	14.02	50.00%		1,005.91	5.03E-01
	Ethyl Benzene	2.48%	14.02	50.00%		243.38	1.22E-01
Tnemec N140-0140B	Xylene	12.27%	11.62	50.00%		998.20	4.99E-01
	Ethyl Benzene	1.37%	11.62	50.00%		111.45	5.57E-02
	Methyl Isobutyl Ketone	4.07%	11.62	50.00%		331.11	1.66E-01
						TOTAL	1.35E+00
Tnemec F046H0413A	Xylene	12.00%	11.25	50.00%		945.29	4.73E-01
	Ethyl Benzene	2.72%	11.25	50.00%		214.26	1.07E-01
Tnemec F046H0413B	Xylene	13.20%	12.17	50.00%		1,124.16	5.62E-01
	Ethyl Benzene	3.30%	12.17	50.00%		281.04	1.41E-01
						TOTAL	1.28E+00
Tnemec N69-11WHA	Xylene	10.17%	15.27	50.00%		1,086.97	5.43E-01
	Ethyl Benzene	2.47%	15.27	50.00%		263.99	1.32E-01
Tnemec N69-0069B	Xylene	11.83%	12.06	50.00%		998.54	4.99E-01
	Ethyl Benzene	1.32%	12.06	50.00%		111.42	5.57E-02
	Methyl Isobutyl Ketone	3.92%	12.06	50.00%		330.88	1.65E-01
						TOTAL	1.40E+00
Sherwin Williams Epoxy Tan B67H5	Ethyl Benzene	2.00%	14.15	100.00%		396.20	1.98E-01
	Xylene	13.00%	14.15	100.00%		2,575.30	1.29E+00
						TOTAL	1.49E+00
Sherwin Williams Copoxy Gold B62Y110	Ethyl Benzene	0.30%	14.47	100.00%		60.77	3.04E-02
	Xylene	1.00%	14.47	100.00%		202.58	1.01E-01
						TOTAL	1.32E-01
		THINNERS					
Tnemec F041-0004 Thinner	Xylene	33.40%	6.90	100.00%		431.62	2.16E-01
	Methyl Isobutyl Ketone	38.67%	6.90	100.00%		499.73	2.50E-01
	Ethyl Benzene	8.34%	6.90	100.00%		107.78	5.39E-02
						TOTAL	5.20E-01

Notes:
All coatings that Clow will not be used at the MACT designated facility are not included in this spreadsheet.
Clow can use any of the coatins and the thinner (maximum emissions are based on the highest individual and total HAP from a coating plus the individual and total HAP from the thinner.

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Flow Diagram Designation

Pipe Stencil - Small Line (Z004)

Process Description:

	Potential Capacity		2004 Actual Production/Usage Rate
Pipe	275,000	tons of pipe per year	177,195 tons of pipe per year
Coating #1	1,049	Gal/yr	676 Gal/yr

Pipe Stencil - Small Line (Z004)		
Control Device:	N/A	
Control Device outlet grain loading	N/A	gr/dscf
Air Flow:	N/A	acfm
Settling Factor (inside) PM/PM-10	N/A	%
Coating Density	10.5	lbs/gal
HAP Content	4.00%	% by Wt.

	Analyte	CAS #	Lbs/year	TPY
Various	Ethylene Glycol	107-21-1	4.41E+02	2.20E-01
			Total HAPs	2.20E-01

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Flow Diagram Designation		Potential Capacity		2004 Actual Production/Usage Rate
Paint Stencil - Large Line (Z075)	Pipe	275,000	tons of pipe per year	177,195 tons of pipe per year
	Coating #1	484	Gal/yr	312 Gal/yr

Process Description:

Paint Stencil - Large Line (Z075)		
Control Device:	N/A	
Control Device outlet grain loading (PM/PM-	N/A	gr/dscf
Air Flow:	N/A	acfm
Settling Factor (inside) PM/PM-10	N/A	%
Coating Density	10.5	lbs/gal
HAP Content	4.00%	% by Wt.

	Analyte	CAS #	Lbs/year	TPY
Various	Ethylene Glycol	107-21-1	2.03E+02	1.02E-01
			Total HAPs	1.02E-01

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Flow Diagram Designation		Potential Capacity	2004 Actual Production/Usage Rate
Pipe Paint Striping - Small Line (Z1	Pipe	275,000 tons of pipe per year	177,195 tons of pipe per year
	Coating #1	365 Gal/yr	233 Gal/yr

Process Description:

Pipe Paint Striping - Small Line (Z131)		
Control Device:	N/A	
Control Device outlet grain loading	N/A	gr/dscf
Air Flow:	N/A	acfm
Settling Factor (inside) PM/PM-10	N/A	%
Coating Density	8.092302	lbs/gal
HAP Content (Cumene)	0.47%	% by Wt.
HAP Content (Ethyl Benzene)	0.18%	% by Wt.

	Analyte	CAS #	Lbs/year	TPY
Various	Cumene	98-80-8	1.39E+01	6.94E-03
	Ethyl Benzene	100-41-4	5.32E+00	2.66E-03
			Total HAPs	**9.60E-03**

HAP Emission Calculations
Clow Water Systems Company
Coshocton, Ohio

Flow Diagram Designation

Pipe Paint Striping - Large Line (Z132)

Process Description:

			Potential Capacity	2004 Actual Production/Usage Rate
Pipe			275,000 tons of pipe per year	177,195 tons of pipe per year
Coating #1			365 Gal/yr	233 Gal/yr
			2.4 gal/day	

Pipe Paint Striping - Large Line (Z132)		
Control Device:	N/A	
Control Device outlet grain loading (PM/PM-	N/A	gr/dscf
Air Flow:	N/A	acfm
Settling Factor (inside) PM/PM-10	N/A	%
Coating Density	8.092302	lbs/gal
HAP Content (Cumene)	0.47%	% by Wt.
HAP Content (Ethyl Benzene)	0.18%	% by Wt.

	Analyte	CAS #	LBs/year	tpy
Various	Cumene	98-80-8	1.39E+01	6.94E-03
	Ethyl Benzene	100-41-4	5.32E+00	2.66E-03
			Total HAPs	9.60E-03

Flow Diagram Designation

Gas-fired air makeup units (B001, B002, B006, B007)

Process Description:

Gas-fired air makeup units (B001, B002, B006, B007)

Control Device:

Natural Gas Combustion

Inputs	
33.4	Max hourly heat input Rate (mmBtu/hr) **
1,020	Fuel heat content (Btu/ft^3)
0.033	Max hourly fuel usage rate (million standard cubic feet hour)
287	Max annual fuel usage rate (million standard cubic feet year)

POLLUTANT	CAS #	Emission Factor (lb/10^6 scf)*	Potential Emissions (lb/hr)	Potential Emissions (TPY)
Arsenic	7440-38-2	2.0E-04	6.55E-06	2.87E-05
Beryllium	7440-41-7	1.2E-05	3.93E-07	1.72E-06
Cadmium	7440-43-9	1.1E-03	3.60E-05	1.58E-04
Chromium	7440-47-3	1.4E-03	4.58E-05	2.01E-04
Cobalt	7440-48-4	8.4E-05	2.75E-06	1.20E-05
Lead		5.0E-04	1.64E-05	7.17E-05
Manganese	7439-96-5	3.8E-04	1.24E-05	5.45E-05
Mercury	7439-97-6	2.6E-04	8.51E-06	3.73E-05
Nickel	7440-02-0	2.1E-03	6.88E-05	3.01E-04
Selenium	7782-49-2	2.4E-05	7.86E-07	3.44E-06
POM/2-Methylnaphthalene	91-57-6	2.4E-05	7.86E-07	3.44E-06
POM/3-Methylchloranthrene	56-49-5	1.8E-06	5.89E-08	2.58E-07
POM/7,12-Dimethylbenz(a)anthracene		1.6E-05	5.24E-07	2.29E-06
POM/Acenaphthene	83-32-9	1.8E-06	5.89E-08	2.58E-07
POM/Acenaphthylene	203-96-8	1.8E-06	5.89E-08	2.58E-07
POM/Anthracene	120-12-7	2.4E-06	7.86E-08	3.44E-07
POM/Benz(a)anthracene	56-55-3	1.8E-06	5.89E-08	2.58E-07
Benzene	71-43-2	2.1E-03	6.88E-05	3.01E-04
POM/Benzo(a)pyrene	50-32-8	1.2E-06	3.93E-08	1.72E-07
POM/Benzo(b)fluoranthene	205-99-2	1.8E-06	5.89E-08	2.58E-07
POM/Benzo(g,h,i)perylene	191-24-2	1.2E-06	3.93E-08	1.72E-07
POM/Benzo(k)fluoranthene	205-82-3	1.8E-06	5.89E-08	2.58E-07
POM/Chrysene	218-01-9	1.8E-06	5.89E-08	2.58E-07
POM/Dibenzo(a,h)anthracene	53-70-3	1.2E-06	3.93E-08	1.72E-07
Dichlorobenzene	25321-22-6	1.2E-03	3.93E-05	1.72E-04
POM/Fluoranthene	206-44-0	3.0E-06	9.82E-08	4.30E-07
POM/Fluorene	86-73-7	2.8E-06	9.17E-08	4.02E-07
Formaldehyde	50-00-0	7.5E-02	2.46E-03	1.08E-02
Hexane	110-54-3	1.8E+00	5.89E-02	2.58E-01
POM/Indeno(1,2,3-cd)pyrene	193-39-5	1.8E-06	5.89E-08	2.58E-07
Naphthalene	91-20-3	6.1E-04	2.00E-05	8.75E-05
POM/Phenanathrene	85-01-8	1.7E-05	5.57E-07	2.44E-06
POM/Pyrene	129-00-0	5.0E-06	1.64E-07	7.17E-07
Toluene	108-88-3	3.4E-03	1.11E-04	4.88E-04
Total POM		8.8E-05	2.89E-06	1.26E-05
Total HAPs		1.9E+00	6.18E-02	2.71E-01

* Emission Factors from USEPA's AP-42 Fifth Edition, July 1998,
Chapter 1.4 (Natural Gas Combustion, External Combustion Sources), Tables 1.4-1+2+3+4.

** The fuel values represent the maximum fuel used by all 4 air make up units

Many emission factors were < than a specific value.
The number of the specific value was used to error on the conservative side.