Permit #180-00a

MUELLER BRASS-Pt Huron AIR EMISSIONS - CALCULATIONS

This copy run= 28-Mar-06

Years 2003-2004-2005-2006 PM-TOTAL

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		BAGHOUSES A,B&C*			BAGHOUSES - Rolling 12 Mo. Total, Not a Permit Reqm't But necessary to confirm compliance with Cond. #6, 9, 18, & 23						R-Dryer (#1) This This Record NOT a Permit Reqm't but Confirms Compliance w/Cond #29 Limit 2.4 lb/hr				R-Dryer (#1) ROLLING 12 Mo. PERIOD; NOT a Permit Cond, but confirms compliance w/Cond#6 & 29; Limit 10.6 tpy		A-Dryer (#2) removed from service June 2001 (moth balled)				A-Dryer (#2) ROLLING 12 Mo. PERIOD; Cond #30; Limit 11.8 tpy		Sludge Dryer (linked)	Plant-Wide Total PM Emitted (PM total, Record NOT a permit reqm't; See PM10) Sht	
	Month	Hours of Operation	Pounds Emitted	Tons Emitted	System A, LBS	Sys. A; Spl Cond #23; Limit 4.38 tpy; TONS	System B LBS	System B Cond #9; Limit 4.38 tpy; TONS	System C; LBS	System C Cond #18; Limit 4.38 tpy; TONS	R-Dryer Hours	Pounds Emitted	Tons Emitted	Lbs/Hr (Mo. Ave) Cond #29	TOTAL Pounds	TOTAL Tons Cond #29	A-Dryer Hours	Pounds Emitted SET to Zero	Tons Emitted	Lbs/Hr (Mo. Ave) Cond #30	TOTAL Pounds	TOTAL Tons	Pounds	Pounds Emitted	Tons Emitted
Yr 2006	January '06	576	933	0.467	2830	1.415	2830	1.415	4527	2.264	312.0	533.5	0.3	1.7	7209	3.60							5.07	1,472	0.736
	February	528	855	0.428	2833	1.417	2833	1.417	4533	2.267	368.0	629.3	0.3	1.7	6977	3.49							5.12	1,490	0.745
	March	496	804	0.402	2783	1.391	2783	1.391	4452	2.226	520.0	889.2	0.4	1.7	6990	3.50							4.63	1,697	0.849
	April	0	0	0.000	2524	1.262	2524	1.262	4038	2.019	0.0	0.0	0.0	NA	6963	3.48							0.00	0	0.000
	May	0	0	0.000	2304	1.152	2304	1.152	3686	1.843	0.0	0.0	0.0	NA	6293	3.15							0.00	0	0.000
	June	0	0	0.000	2041	1.021	2041	1.021	3266	1.633	0.0	0.0	0.0	NA	5622	2.81							0.00	0	0.000
	July	0	0	0.000	1861	0.931	1861	0.931	2978	1.489	0.0	0.0	0.0	NA	5171	2.59							0.00	0	0.000
	August	0	0	0.000	1627	0.814	1627	0.814	2604	1.302	0.0	0.0	0.0	NA	4460	2.23							0.00	0	0.000
	September	0	0	0.000	1325	0.662	1325	0.662	2120	1.060	0.0	0.0	0.0	NA	3488	1.74							0.00	0	0.000
	October	0	0	0.000	1087	0.544	1087	0.544	1740	0.870	0.0	0.0	0.0	NA	2928	1.46							0.00	0	0.000
	November	0	0	0.000	932	0.466	932	0.466	1492	0.746	0.0	0.0	0.0	NA	2490	1.24							0.00	0	0.000
	December	0	0	0.000	720	0.360	720	0.360	1152	0.576	0.0	0.0	0.0	NA	2052	1.03							0.00	0	0.000
2003	SUM '03=	6536	10,588	5.294							4040	6908	3.5										5.07	17,502	8.751
2004	SUM '04=	6,968	11,288	5.644							3,920	6,703	3.35										5.12	17,996	8.998
2005	SUM '05=	6,248	10,122	5.061							4,448	7,606	4										5	17,732	8.866

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All based on Barry's notes

Notes: * Emission test yield 0.045 lb/hr ea louver x 30 louvers = 1.62 lb/hr

Assumes maximum charge rate as done during emission testing

This is worse case & yields maximum emissions

Beginning in June 2001 Baghouse A for #1, 2, 5 & 6 furn Verified by test & calc: 10 louvers x 0.045 lb/hr/louver = 0.45 lbs/hr PM Total, PM-10 is 95%

Beginning in June 2001 Baghouse B for new chip inert system #4 Caster Verified by test & calc: 10 louvers x 0.045 lb/hr/louver = 0.45 lbs/hr PM Total, PM-10 is 95%

Baghouse C for #8 furnace, 16 louvers Verified by test & calc: 16 louvers x 0.045 lbs/hr/louver = 0.72 lbs/hr PM Total, PM-10 is 95%

SLUDGE DRYER PM & PM10 EMISSIONS

Yr 2003, 2004, 2005, 2006 Air Permit #180-00a

file:ENV-JDW\air\Permit-#180-00a-emiss-2003 & 2004 & 2005

this copy run today = 28-Mar-06

			Total PM		PM - Total	PM-10 - Spl Cond#49		
	Month	Hours of Operation (Dryer Unit Only)^	Pounds Emitted	Tons Emitted	12 Month Rolling Total - Tons Record Not a Permit Reqm't but supports Cond #49 Limit 1.0 tpy	Pounds Emitted	Tons Emitted	12 Month Rolling Total - Tons Record Not a Permit Reqm't but supports Cond #49 Limit 1.0 tpy
Yr 2003	January	134	0.40	0.000202	0.003586	0.38	0.00019	0.003407104
	February	139	0.42	0.000209	0.003537	0.40	0.00020	0.003360079
	March	117	0.35	0.000176	0.003417	0.33	0.00017	0.003246079
	April	153	0.46	0.000230	0.003326	0.44	0.00022	0.003159296
	May	147	0.44	0.000221	0.003212	0.42	0.00021	0.003050996
	June	160	0.48	0.000240	0.003126	0.46	0.00023	0.002969985
	July	155	0.47	0.000233	0.002997	0.44	0.00022	0.002847435
	August	145	0.44	0.000218	0.002869	0.41	0.00021	0.002725455
	September	133	0.40	0.000200	0.002711	0.38	0.00019	0.00257526
	October	142	0.43	0.000213	0.002568	0.40	0.00020	0.002439315
	November	111	0.33	0.000167	0.002449	0.32	0.00016	0.002326313
	December	154	0.46	0.000231	0.002536	0.44	0.00022	0.00240882
Yr 2004	January '04	134	0.40	0.000201	0.002535	0.38	0.00019	0.00240825
	February	167	0.50	0.000251	0.002577	0.48	0.00024	0.00244815
	March	197	0.59	0.000296	0.002697	0.56	0.00028	0.00256215
	April	141	0.42	0.000212	0.002679	0.40	0.00020	0.00254505
	May	143	0.43	0.000215	0.002673	0.41	0.00020	0.002539208
	June	152	0.46	0.000228	0.002661	0.43	0.00022	0.00252795
	July	142	0.43	0.000213	0.002642	0.40	0.00020	0.002509425
	August	144	0.43	0.000216	0.002640	0.41	0.00021	0.002508
	September	120	0.36	0.000180	0.002621	0.34	0.00017	0.002489475
	October	136	0.41	0.000204	0.002612	0.39	0.00019	0.002480925
	November	118	0.35	0.000177	0.002622	0.34	0.00017	0.0024909
	December	111	0.33	0.000167	0.002558	0.32	0.00016	0.002429625
Yr 2005	January	104	0.31	0.00	0.0025	0.30	0.0001	0.0024
	February	136	0.41	0.00	0.0025	0.39	0.0002	0.0023
	March	131	0.39	0.00	0.0024	0.37	0.0002	0.0022
	April	120	0.36	0.00	0.0023	0.34	0.0002	0.0022
	May	137	0.41	0.00	0.0023	0.39	0.0002	0.0022
	June	137	0.41	0.00	0.0023	0.39	0.0002	0.0022
	July	130	0.39	0.00	0.0023	0.37	0.0002	0.0022
	August	146	0.44	0.00	0.0023	0.42	0.0002	0.0022
	September	135	0.41	0.00	0.0023	0.38	0.0002	0.0022
	October	116	0.35	0.00	0.0023	0.33	0.0002	0.0022
	November	140	0.42	0.00	0.0023	0.40	0.0002	0.0022
	December	111	0.33	0.00	0.0023	0.32	0.0002	0.0022
Yr 2006	January	126	0.38	0.00	0.0023	0.36	0.0002	0.0022
	February	116	0.35	0.00	0.0023	0.33	0.0002	0.0022
	March	0	0.00	0.00	0.0021	0.00	0.0000	0.0020
	April	0	0.00	0.00	0.0019	0.00	0.0000	0.0018
	May	0	0.00	0.00	0.0017	0.00	0.0000	0.0016
	June	0	0.00	0.00	0.0015	0.00	0.0000	0.0015
	July	0	0.00	0.00	0.0013	0.00	0.0000	0.0013
	August	0	0.00	0.00	0.0011	0.00	0.0000	0.0011
	September	0	0.00	0.00	0.0009	0.00	0.0000	0.0009
	October	0	0.00	0.00	0.0007	0.00	0.0000	0.0007
	November	0	0.00	0.00	0.0005	0.00	0.0000	0.0005
	December	0	0.00	0.00	0.0004	0.00	0.0000	0.0003
2003	'03 SUM =	1690.4	5.07	0.002536		4.82	0.00241	
2004	'04 SUM =	1,705	5.12	0.003		4.86	0.002	
2005	'05 SUM =	1,543	4.63	0.002		4.40	0.002	

Manf Emissions Data: 0.003 pounds/hour of operation, PM emission
Emission concentration is <2.0E-3 lbs/1000 lbs dry exhaust gas; Rule 331 "OK"
Estimate: PM-10 = 95% of Total PM

^ - Operating Hours are based on a Calendar Month, not the acct month used in Production

Construction of Sheet:
Cell D20 is the hourly emission rate referenced by calc. in work sht DON'T CHANGE IT! = 0.003

AIR EMISSIONS - MONTHLY CALCULATIONS

HAP-LEAD Yrs 2003, 2004, 2005, 2006

file:ENV-JDW\air\Permit-#180-00a-emiss-2003 & 2004 & 2005

		BAGHOUSES A,B&C *^			R-Dryer Hrs	R-Dryer (#1)**		A-Dryer Hrs	A-Dryer (#2)***		Plant-Wide HAP-LEAD; Cond #5		ROLLING 12 Mos. PERIOD; Cond #2, Limit <9 tpy	
	Month	Hours of Operation	Pounds Emitted	Tons Emitted		Pounds Emitted	Tons Emitted		Pounds Emitted	Tons Emitted	Pounds Emitted	Tons Emitted	Total Lbs (Linked)	Total Tons
Yr 2006	January '06	576	18.7	0.009	312	19.0	0.009				38	0.019	460	0.23
	February	528	17.1	0.009	368	22.4	0.011				39	0.020	452	0.23
	March	496	16.1	0.008	520	31.6	0.016				48	0.024	449	0.22
	April	0	0.0	0.000	0	0.0	0.000				0	0.000	429	0.21
	May	0	0.0	0.000	0	0.0	0.000				0	0.000	389	0.19
	June	0	0.0	0.000	0	0.0	0.000				0	0.000	347	0.17
	July	0	0.0	0.000	0	0.0	0.000				0	0.000	318	0.16
	August	0	0.0	0.000	0	0.0	0.000				0	0.000	276	0.14
	September	0	0.0	0.000	0	0.0	0.000				0	0.000	219	0.11
	October	0	0.0	0.000	0	0.0	0.000				0	0.000	182	0.09
	November	0	0.0	0.000	0	0.0	0.000				0	0.000	156	0.08
	December	0	0.0	0.000	0	0.0	0.000				0	0.000	125	0.06
2003	'03 SUM =	6536	211.8	0.106		245.4	0.123				457	0.229		
2004	'04 SUM=	6968	225.7632	0.112882	3920	238.093	0.119046				464	0.232		
2005	'05 SUM=	6248	202.4	0.1	4448	270.2	0.1				472.5978	0.2		

Assumes maximum charge rate as done during emission testing but rairly achived in operation

This is worse case & yields maximum emissions

*^ From stack test PM emissions from Baghouses = 1.62 #/hr which PM were 2% LEAD

** From stack tests Aug98 PM=1.91 #/Hr & the PM emission was 3.18% LEAD

*** From stack test on A-Dryer PM = 0.114 #/hr which was 8% LEAD; Barry had listed in error as 1.14#/hr & this # in above calc. NEED TO CHANGE,

but left here for now as "worse case" & unit is shut dn. & Out of Service-Gas Line disconnected

AIR EMISSIONS - MONTHLY CALCULATIONS

HAP HCl **Years 2003, 2004, 2005,2006** file:ENV-JDW\air\Permit-#180-00a-emiss-2003 & 2004

			R-Dryer Hours	R-Dryer Spl Cond #2 & 5		A-Dryer Hours	A-Dryer Spl Cond #34 Unit shut down (moth balled)		Forging Cleaning Line SHUT DOWN & REMOVED DEC 2001 NO MORE EMISSIONS		Monthly SUM Spl Cond #5	Plant-Wide HAP-HCl Emitted, 12 mo. Rolling Total -Spl Cond #2 Limit 9 tpy { *Also Indirectly Dryers Spl Cond 31 Limit 8.7 tpy*	
		Casting Hours of Operation^		Pounds Emitted	Tons Emitted		Pounds Emitted	Tons Emitted	Pounds Emitted	Tons Emitted	Pounds	Pounds Emitted	Tons Emitted
Yr 2006	January '06	576	312	6.1	0.00304						6.1	82	0.0411
	February	528	368	7.2	0.00359						7.2	80	0.0398
	March	496	520	10.1	0.00507						10.1	80	0.0399
	April	0	0	0.0	0.00000						0.0	79	0.0397
	May	0	0	0.0	0.00000						0.0	72	0.0359
	June	0	0	0.0	0.00000						0.0	64	0.0321
	July	0	0	0.0	0.00000						0.0	59	0.0295
	August	0	0	0.0	0.00000						0.0	51	0.0254
	September	0	0	0.0	0.00000						0.0	40	0.0199
	October	0	0	0.0	0.00000						0.0	33	0.0167
	November	0	0	0.0	0.00000						0.0	28	0.0142
	December	0	0	0.0	0.00000						0.0	23	0.0117
2003	'03 SUM =	6536	4040	79	0.03939						79		
2004	'04 SUM=	6,968	3,920	76	0.038						76		
2005	'05 SUM=	6,248	####	87	0						87		

DON'T MODIFY NUMBER's IN YELLOW - They are LINKED to Calcs.

Clayton test, 1998; R-Dryer 0.0195 lbs/hr

~~Clayton: A-Dryer emits less than 0.0134 lbs/hr~~

~~Forging Scrubber: Swanson Stack test reported of 11 Feb '93 HCl emiss. calc to = 0.006098 Lbs/Hr~~

~~Forging first tk Nitric (2nd Nitric tk), HCl test by Mueller on 23 Sept 99, calc to = 0.0019546 Lbs/Hr~~

~~Forgings SUM of HCl emitted 2 stacks, from Scrubber & 1st tank, = 0.0080626 Lbs/Hr~~ Complies w/Spl Cond #45 Limit 0.03 lbs/

^ - Hours are "Accounting Month", not calendar

AIR EMISSIONS - MONTHLY CALCULATIONS

Years 2003, 2004, 2005, 2006

TOTAL HAP's - Each Process & Plant Wide (Tons)

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		Baghouse Systems - A,B & C Spl Condition #2			R-Dryer (#1)** Cond #2			A-Dryer (#2)*** Cond #2 {moth balled June 2001}			Forging Cleaning Line, Cond #2 REMOVED DEC 2001			TOTAL HAP's Plant Wide this month; Spl Cond #5			Plant-Wide HAP's; Individual and Combined; 12mo **Rolling** Total- Cond #2 (Limit 22 tpy)			
	Month	LEAD	Total HCl	Total HAP's this Process	LEAD	HCL	Total HAP'S this Process	LEAD	HCL	TOTAL HAP's this Process	LEAD	HCL	TOTAL HAP's this Process	LEAD Tons	HCl Tons	Aggregate All HAP's Tons	LEAD Lbs	HCL Lbs.	COMBINED Lbs.	COMBINED Tons
Yr 2006	January '06	0.009	0.000	0.009	0.009	0.003	0.013							0.019	0.003	0.022	460	82	542	0.27
	February	0.009	0.000	0.009	0.011	0.004	0.015							0.020	0.004	0.023	452	80	531	0.27
	March	0.010	0.000	0.010	0.019	0.006	0.025							0.029	0.006	0.035	459	82	541	0.27
	April	0.000	0.000	0.000	0.000	0.000	0.000							0.000	0.000	0.000	439	81	521	0.26
	May	0.000	0.000	0.000	0.000	0.000	0.000							0.000	0.000	0.000	400	74	473	0.24
	June	0.000	0.000	0.000	0.000	0.000	0.000							0.000	0.000	0.000	357	66	423	0.21
	July	0.000	0.000	0.000	0.000	0.000	0.000							0.000	0.000	0.000	328	61	389	0.19
	August	0.000	0.000	0.000	0.000	0.000	0.000							0.000	0.000	0.000	286	53	339	0.17
	September	0.000	0.000	0.000	0.000	0.000	0.000							0.000	0.000	0.000	229	42	271	0.14
	October	0.000	0.000	0.000	0.000	0.000	0.000							0.000	0.000	0.000	192	35	228	0.11
	November	0.000	0.000	0.000	0.000	0.000	0.000							0.000	0.000	0.000	166	30	196	0.10
	December	0.000	0.000	0.000	0.000	0.000	0.000							0.000	0.000	0.000	135	25	160	0.08
2003	'03 SUM =	0.106	0.000	0.106	0.123	0.039	0.162													
2004	'04 SUM=	0.113	0.000	0.113	0.119	0.038	0.157													
2005	'05 SUM=	0.101	0.000	0.101	0.135	0.043	0.178													

AIR EMISSIONS - MONTHLY CALCULATIONS

NOx

Yrs 2003, 2004, 2005, 2006

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	Calender Month	Spl Cond 7 and 8: MCF Used Cond# 8	Total Lbs Emitted ^	Tons Emitted Cond# 7	ROLLING 12 Mos. PERIOD; Cond #4 * Limit = 89.9 tpy: Total Lbs (Linked) *	Total Tons
Yr 2006	January '06	21,453	3,003	1.502	28,622	14.31
	February	21,417	2,998	1.499	28,365	14.18
	March	-	0	0.000	25,196	12.60
	April	-	0	0.000	23,339	11.67
	May	-	0	0.000	21,169	10.58
	June	-	0	0.000	19,155	9.58
	July	-	0	0.000	17,452	8.73
	August	-	0	0.000	15,222	7.61
	September	-	0	0.000	12,952	6.48
	October	-	0	0.000	10,825	5.41
	November	-	0	0.000	8,592	4.30
	December	-	0	0.000	6,002	3.00
2003	'03 SUM =	328,760	46,026	23.013		
2003	'03 Max ea column=	67,410	9,437	4.72	65,333	32.67
2004	'04 SUM=	204,755	28,666	14.333		
2004	'04 Max ea column=	24,209	3,389	1.69	39,978	19.99
2005	'05 SUM=	208,257	29,156	15		
2005	'05 Max ea column=	25,269	3,538	2	30,448	15

^ Calc based upon "old" MAERS Emissions Factor of 140 Lbs NOx per MMCF, except some, e.g. space heater are at 100 #/MMCF

* Yr 2001 was first year of data collection & permit reqm't