Freeport-McMoRan Sierrita Inc.
Emissions Inventory Summary
(Tons/Year)

		Non-Fugitive Emissions								Fugitive Emissions								
Source ID	**Description**	**PM**	**PM10**	**PM-2.5**	**SOx**	**NOx**	**VOCs**	**HAPs**	**CO**	**PM**	**PM10**	**PM-2.5**	**SOx**	**NOx**	**VOCs**	**HAPs**	**CO**	**H2SO4**
009	**#1 FARR - Fine Ore Bin**	0.4259	0.4259	0.0639	--	--	--	0.000192077	--									
010	**#2 FARR - Fine Ore Bin**	0.0473	0.0473	0.0071	--	--	--	2.13419E-05	--									
011	**#3 FARR - Fine Ore Bin**	0.0379	0.0379	0.0057	--	--	--	1.70735E-05	--									
012	**#4 FARR - Fine Ore Bin**	0.0828	0.0828	0.0124	--	--	--	3.73484E-05	--									
013	**#5 FARR - Fine Ore Bin**	0.0260	0.0260	0.0039	--	--	--	1.17381E-05	--									
014	**#6 FARR - Fine Ore Bin**	0.0686	0.0686	0.0103	--	--	--	3.09458E-05	--									
015	**#7 FARR - Fine Ore Bin**	0.0071	0.0071	0.0011	--	--	--	3.20129E-06	--									
016	**#8 FARR - Fine Ore Bin**	0.0544	0.0544	0.0082	--	--	--	2.45432E-05	--									
017	**#9 FARR - Fine Ore Bin**	0.0463	0.0463	0.0069	--	--	--	2.08846E-05	--									
018	**#0 Wet Scrubber - Sierrita Mill**	0.7731	0.3865	0.1160	--	--	--	0.000348641	--									
019	**#1 Wet Scrubber - Sierrita Mill**	1.4508	0.7254	0.2176	--	--	--	0.000654264	--									
020	**#2 Wet Scrubber - Sierrita Mill**	0.6256	0.3128	0.0938	--	--	--	0.000282114	--									
021	**#3 Wet Scrubber - Sierrita Mill**	0.6256	0.3128	0.0938	--	--	--	0.000282114	--									
022	**#4 Wet Scrubber - Sierrita Mill**	0.7986	0.3993	0.1198	--	--	--	0.000360145	--									
023	**#5 Wet Scrubber - Sierrita Mill**	1.2777	0.6389	0.1917	--	--	--	0.000576232	--									
024	**#6 Wet Scrubber - Sierrita Mill**	0.2928	0.1464	0.0439	--	--	--	0.000132053	--									
025	**#7 Wet Scrubber - Sierrita Mill**	2.2760	1.1380	0.3414	--	--	--	0.001026414	--									
026	**#8 Wet Scrubber - Sierrita Mill**	0.6921	0.3461	0.1038	--	--	--	0.000312126	--									
027	**#9 Wet Scrubber - Sierrita Mill**	0.2662	0.1331	0.0399	--	--	--	0.000120048	--									
028	**#10 Wet Scrubber - Sierrita Mill**	0.4126	0.2063	0.0619	--	--	--	0.000186075	--									
029	**#11 Wet Scrubber - Sierrita Mill**	0.3594	0.1797	0.0539	--	--	--	0.000162065	--									
030	**#12 Wet Scrubber - Sierrita Mill**	0.1996	0.0998	0.0299	--	--	--	9.00363E-05	--									
031	**#13 Wet Scrubber - Sierrita Mill**	0.7731	0.3865	0.1160	--	--	--	0.000348641	--									
032	**#14 Wet Scrubber - Sierrita Mill**	0.7731	0.3865	0.1160	--	--	--	0.000348641	--									
033	**#15 Wet Scrubber - Sierrita Mill**	0.7731	0.3865	0.1160	--	--	--	0.000348641	--									
041	**Unleached Moly Sulfide Wet Scrubber**	0.4727	1.3766	0.1418	--	--	22.2504	0.000423225	--									
042	**Moly Sulfide Bins - #1 & 3 Moly Sulfide Baghouse**	0.5666	0.5666	0.0202	--	--	--	0.0005073	--									
044	**Moly Sulfide Dump Hoppers - 3 Hoppers**	6.9610	3.4805	2.0883	--	--	--	0.006232538	--									
044A	**Moly Sulfide Dump Hopper Baghouse**	1.6402	0.8201	0.4921	--	--	--	0.001468534	--									
045	**Moly Sulfide Screw Conveyor Loadout #1**	0.4380	0.1752	0.1314	--	--	--	0.000392161	--									
048	**Moly Oxide Bins - #2 Baghouse**	1.3230	0.6615	0.3969	--	--	--	0.000875853	--									

Emissions Inventory Summary

Source ID	Description	PM	PM10	PM-2.5	SOx	NOx	VOCs	HAPs	CO	PM	PM10	PM-2.5	SOx	NOx	VOCs	HAPs	CO	H2SO4
053	Leached Moly Sulfide Wet Scrubber #1	0.6988	1.4899	0.2096	--	--	19.4998	0.000625691	--									
054	Leached Moly Sulfide Wet Scrubber #2	0.2293	0.9383	0.0688	--	--	19.4998	0.000205325	--									
058	Molybdenum Roaster	13.5342	13.5342	7.4438	70.6066	14.9289	0.8211	0.292389719	12.5403									
059	Moly Cannery FARR	0.2029	0.2029		--	--	--	0.000134308	--									
062-Misc	Misc. Natural Gas Equipment	0.2530	0.2530	0.2530	0.0200	3.3288	0.1831	0.062846353	2.7962									
062-062	East Parker Boiler	0.2763	0.2763	0.2763	0.0218	3.6354	0.1999	0.068634832	3.0537									
062-064	East Therminol Heater	0.2081	0.2081	0.2081	0.0164	2.7375	0.1506	0.051682856	2.2995									
062-065	West Therminol Heater	0.2081	0.2081	0.2081	0.0164	2.7375	0.1506	0.051682856	2.2995									
062-080	Rhenium Plant Hot Water Heater	0.0399	0.0399	0.0399	0.0032	0.5256	0.0289	0.009923108	0.4415									
062-081	Change Room Boiler	0.0666	0.0666	0.0666	0.0053	0.8760	0.0482	0.016538514	0.7358									
062-082	SX1 - Parker Boiler	0.0865	0.0865	0.0865	0.0068	1.1388	0.0626	0.021500068	0.9566									
062-083	Zinc Pot Heater	0.0200	0.0200	0.0200	0.0016	0.2628	0.0145	0.004961554	0.2208									
062-084	West Parker Boiler	0.2036	0.2036	0.2036	0.0161	2.6790	0.1473	0.05057895	2.2504									
062-091	Twin Buttes Boiler - EW Plant	0.2796	0.2796	0.2796	0.0221	3.6792	0.2024	0.069461758	3.0905									
062-098	Autoclave Boiler (Rhenium Plant)	0.0932	0.0932	0.0932	0.0074	1.2264	0.0675	0.023153919	1.0302									
062-099	Twin Buttes Parker Boiler - EW Plant	0.1465	0.1465	0.1465	0.0116	1.9272	0.1060	0.03638473	1.6188									
062-100	New Boiler	0.1102	0.1102	0.1102	0.0087	1.4498	0.0797	0.02737124	1.2178									
062-101	Landa Pressure Washer	0.0133	0.0133	0.0133	0.0011	0.1752	0.0096	0.003307703	0.1472									
063	Lime Handling Wet Scrubber #1	1.3289	1.3289	0.1993	--	--	--	--	--									
063A	Lime Handling Wet Scrubber #2	0.2663	0.2663	0.0399	--	--	--	--	--									
066	Blasting - ANFO									30.2986	15.7553	0.9090	22.1800	188.5300	--	--	743.0300	
069	6A/6B Overland CTP B2 to B3	3.0660	1.0074	0.2847	--	--	--	0.001382705	--									
072	A3 Stacker to Coarse Ore Stockpile									55.2420	26.1280	3.9565	--	--	--	0.024913023	--	
073	Concentrate Storage									0.1043	0.0493		--	--	--	0.061440501	--	
075	#10 Wet Scrubber - Secondary Scalping Screens	3.1943	3.1943	0.4792	--	--	--	0.001440581	--									
076	SX Tanks - SX1, 2, &3														0.6579			
077	Unpaved Roads									235.5702	54.6517	9.3191						
078	Gasoline Storage Tanks														2.6243	0.459245399		
087	Sierrita Tailings Impoundment									237.0259	118.5129		--	--	--	--	--	
088	Drilling Operations									10.5120	5.2560		--	--	--	--	--	
089	Ammonium Nitrate Storage									1.9264	0.9632		--	--	--	--	--	
093	Road Rock Crusher - El Jay	0.8259	0.5893															
095	6A/6B Overland CTP A2 to A3	3.8632	1.2693	0.3587	--	--	--	0.001742208	--									
096	6A/6B Overland CTP B3 to B4	4.2924	1.4104	0.3986	--	--	--	0.001935786	--									
097-Dump	Haul Truck Dumping									86.1235	40.7341	6.1683	--	--	--	0.000420006	--	
097-Load	Haul Truck Loading									232.0319	109.7448	16.6185	0.0000	0.0000	0.0000	--	0.0000	
102	B4 Stacker to Coarse Ore Stockpile									61.3800	29.0311	4.3961	--	--	0.0000	0.027681137	--	
105	Twin Buttes Tankhouse															9.35768E-05		1.1697
113A	6A Primary Crusher FARR	0.2981	0.2981	0.0447	--	--	--	0.000134454	--									

Emissions Inventory Summary

Source ID	Description	PM	PM10	PM-2.5	SOx	NOx	VOCs	HAPs	CO	PM	PM10	PM-2.5	SOx	NOx	VOCs	HAPs	CO	H2SO4
113B	6B Primary Crusher FARR	0.2981	0.2981	0.0447	--	--	--	0.000134454	--									
117	Moly Sulfide Screw Conveyor Loadout #2	0.4380	0.1752	0.0000	--	--	--	0.000392161	--									
118	Moly Leach Plant						1.7126	0.730584		--	--		--	--			--	
119	Rhenium Plant Operations									0.0158	0.0079		--	--	--	--	--	
121	#12 Wet Scrubber - 2, 3, & 4T Discharge Screens, etc.	0.1639	0.1639	0.0246	--	--	--	7.39196E-05	--									
123	Decant Handling Facility	0.6570	0.3285	0.0000	--	--	--	0.006195941	--	0.8450	0.4210							
124	Portable Screening Plant	10.8186	5.4093					0.004878972										
125	Magnetic Steel Recovery Plant	6.3773	2.0954	0.5922				0.002876026										
126	Stationary Engines	--	1.3997	--	10.2873	39.7269	2.4481		15.0671									
201	#1 Secondary Crushing Line - #1 Secondary FARR	0.6440	0.6440	0.0966	--	--	2.4481	0.000290453	--									
202	#2 Secondary Crushing Line - #2 Secondary FARR	1.2978	1.2978	0.1947	--	--	--	0.000585288	--									
203	#3 Secondary Crushing Line - #3 Secondary FARR	0.6981	0.6981	0.1047	--	--	--	0.000314812	--									
204	#4 Secondary Crushing Line - #4 Secondary FARR	1.2978	1.2978	0.1947	--	--	--	0.000585288	--									
301	#1 Tertiary Crushing Line - #1 Tertiary FARR	1.8466	1.8466	0.2770	--	--	--	0.000832783	--									
302	#2 Tertiary Crushing Line - #2 Tertiary FARR	1.7144	1.7144	0.2572	--	--	--	0.000773179	--									
303	#3 Tertiary Crushing Line - #3 Tertiary FARR	1.8466	1.8466	0.2770	--	--	--	0.000832783	--									
304	#4 Tertiary Crushing Line - #4 Tertiary FARR	1.1532	1.1532	0.1730	--	--	--	0.00052007	--									
305	#5 Tertiary Crushing Line - #5 Tertiary FARR	1.8466	1.8466	0.2770	--	--	--	0.000832783	--									
306	#6 Tertiary Crushing Line - #6 Tertiary FARR	2.6722	2.6722	0.4008	--	--	--	0.001205101	--									
307	#7 Tertiary Crushing Line - #7 Tertiary FARR	1.8466	1.8466	0.2770	--	--	--	0.000832783	--									
308	#8 Tertiary Crushing Line - #8 Tertiary FARR	0.5585	0.5585	0.0838	--	--	--	0.00025185	--									
309	#9 Tertiary Crushing Line - #9 Tertiary FARR	1.8466	1.8466	0.2770	--	--	--	0.000832783	--									
310	#10 Tertiary Crushing Line - #10 Tertiary FARR	0.5585	0.5585	0.0838	--	--	--	0.00025185	--									
311	8D/8B Conveyor Transfer Point FARR	0.5585	0.5585	0.0838	--	--	--	0.00025185	--									
312	Transfer Tower FARR	0.4188	0.4188	0.0628	--	--	--	0.000188887	--									
Other	Potassium Amyl Xanthate (PAX) use							2.279025565										

Freeport-McMoRan Sierrita Inc.

Emissions Inventory Summary

Source ID	Description	PM	PM10	PM-2.5	SOx	NOx	VOCs	HAPs	CO	PM	PM10	PM-2.5	SOx	NOx	VOCs	HAPs	CO	H2SO4
078 (SP-13 & ML-11)	Gasoline Dispensing Only	--	--	--	--	--	2.6000	0.2808	--									
Total:		97.9300	72.2706	20.5600	81.0522	81.0350	72.7307	4.1282	49.7659	951.0753	401.2551	41.3675	22.1800	188.5300	3.2822	0.5738	743.0300	1.1697

		PM	PM10	PM-2.5	SOx	NOx	VOCs	HAPs	CO	H2SO4
Totals:	Non-Fugitive & Fugitive PTE	1049.0053	473.5257	61.9275	103.2322	269.5650	76.0129	4.7020	792.7959	1.1697

2015 Potential to Emit
Freeport-McMoRan Sierrita Inc.

General Information

Source or Company Name:	Freeport-McMoRan Sierrita Inc.
Mailing Address:	P.O. Box 527 Green Valley, Arizona 85622-0527
Facility Description:	Copper Mine
Contact Person and Title:	Bryce Cook Senior Environmental Scientist
Telephone Number:	(520) 393-2419
PDEQ Class I Air Quality Permit Number:	6067

Freeport-McMoRan Sierrita Inc.
Data Input Summary

2012 Emmisions Inventory

SIERRITA I.D.	Description	Process Thruput	Unit	Document/Value Source	Contact Department
General Data Input					
		2012			
	# days in the reporting period	**366**	days		
	Total "Dumped" to Leach, Waste, Fines, and Ore rehandled (Includes Ore delivered to Primary Crusher)	86,888,763	Tons	Blast/Dump Reconcilliation Report	Chad Hoops / Charlie Orr - Mining Dept.
	Total "Dumped" to Leach, Waste, Fines, and Ore rehandled (Does not include Ore delivered to Primary Crusher)	48,244,445	Tons	Blast/Dump Reconcilliation Report	Chad Hoops / Charlie Orr - Mining Dept.
	Total material loaded.	86,888,230	Tons	Blast/Dump Reconcilliation Report	Chad Hoops / Charlie Orr - Mining Dept.
	Total "Loaded" Above 3850 Elevation	4,817,023	Tons	Blast/Dump Reconcilliation Report - Pit Lip is 4050 Elevation. Emissions below 50 ft. below pit lip do not escape the pit. Use 3850 elevation as conservative estimate.	Chad Hoops / Charlie Orr - Mining Dept.
	% Loaded below pit lip (=%haul truck traffic below 3850 elevation)	0.94	%	Blast/Dump Reconcilliation Report	Chad Hoops / Charlie Orr - Mining Dept.
	Circulating Load on 7B Belt		%	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Circulating Load on 7B %)	ELW
	Crushing and Conveying Total Production	38,644,318	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (8-B Belt Tons)	ELW
	Mean Annual Windspeed	6.80	MPH	Met Data Mean Daily Windspeed - B. Macphee	ELW
	Windspeed at enclosed areas	0.25	MPH	PDSI Historical Emission Inventory Value	ELW
	Ave. % Moisture in Ore at Primary Crusher	2	%	L. Thompsen Email	C&C - L. Thompsen
	Ave. % Moisture in Ore at Secondary Crusher	4	%	Morning Report & Goal of 4%	C&C - L. Thompsen
	Amount of SO2 released from Roaster during upsets	0	lbs	Excess Emissions Reports	ELW
	# days in year with at least 0.01 inches of rain	53	days	EDMS Weather Data	ELW
Specific Source Data Input					
009	Throughput for #1 Fine Ore Bin FARR	38,644,318	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Throughput for #1 FOB FARR) - installed 3/16/10	ELW
010	Throughput for #2 Fine Ore Bin FARR	2,594,928	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 5/24/12	ELW
011	Throughput for #3 Fine Ore Bin FARR	2,429,183	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 6/7/12	ELW
012	Throughput for #4 Fine Ore Bin FARR	2,358,336	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 6/13/12	ELW
013	Throughput for #5 Fine Ore Bin FARR	2,284,208	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 6/19/12	ELW

Freeport-McMoRan Sierrita Inc.
Data Input Summary

SIERRITA I.D.	Description	Process Thruput	Unit	Document/Value Source	Contact Department
014	Throughput for #6 Fine Ore Bin FARR	2,253,549	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 6/22/12	ELW
015	Throughput for #7 Fine Ore Bin FARR	2,178,900	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 6/28/12	ELW
016	Throughput for #8 Fine Ore Bin FARR	1,892,914	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 7/24/12	ELW
017	Throughput for #9 Fine Ore Bin FARR	1,241,502	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - 8-B Belt Tons (Total C/C Production) / 9 - installed 9/17/12	ELW
018	Sier. F.O. Bin DC0	2,497,987	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #0 Mill	ELW
019	Sier. F.O. Bin DC1	2,524,706	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #1 Mill	ELW
020	Sier. F.O. Bin DC2	2,503,341	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #2 Mill	ELW
021	Sier. F.O. Bin DC3	2,521,671	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #3 Mill	ELW
022	Sier. F.O. Bin DC4	2,461,616	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #4 Mill	ELW
023	Sier. F.O. Bin DC5	2,513,572	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #5 Mill	ELW
024	Sier. F.O. Bin DC6	2,538,165	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #6 Mill	ELW
025	Sier. F.O. Bin DC7	2,529,406	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #7 Mill	ELW
026	Sier. F.O. Bin DC8	2,532,733	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #8 Mill	ELW
027	Sier. F.O. Bin DC9	2,541,113	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #9 Mill	ELW
028	Sier. F.O. Bin DC10	2,486,512	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #10 Mill	ELW
029	Sier. F.O. Bin DC11	2,350,694	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #11 Mill	ELW
030	Sier. F.O. Bin DC12	2,499,334	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #12 Mill	ELW
031	Sier. F.O. Bin DC13	2,310,336	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #13 Mill	ELW
032	Sier. F.O. Bin DC14	2,488,691	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #14 Mill	ELW
033	Sier. F.O. Bin DC15	2,472,658	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K - #15 Mill	ELW
041	Mo Unl. Dry. Scrubber	9,492	tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Unleached Moly)	ELW

Freeport-McMoRan Sierrita Inc.
Data Input Summary

SIERRITA I.D.	Description	Process Thruput	Unit	Document/Value Source	Contact Department
041	Mo Unl. Dry. Scrubber	8,649	Hours	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Unleached Moly Scrubber Runtime)	
042	Mo Sulfide Bins	44,069	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Leached Moly Tons)	ELW
042	Mo Sulfide Bins	8,784	Hours	Based on total potential operating hours (make sure to adjust for leap year in 2012)	
044	MoS Oversize Hopper & PDC Hopper	2,399	Tons	Oversize + PDC Throughput from monthly Title V Records (This changed in 2007, no longer includes MoS Dump Hopper)	Title V Records Binder - Moly
044A	MoS2 Dump Hopper	17,242	Tons	MoS Hopper Throughput from monthly Title V Records	Title V Records Binder - Moly
045	MoS2 Loadout	13,978	Tons	Moly Sulfide Loadout SC - #1 Throughput - Title V Monthly Records Spreadsheet	Title V Records Binder - Moly
048	Mo Oxide Bins	25,635	tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Roaster 1 & 2)	ELW
048	Mo Oxide Bins	8,784	Hours	Based on total potential operating hours (make sure to adjust for leap year in 2008)	
053	Mo Lcd Dryer 1	22,034	tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Leached Moly Tons / 2 dryers)	ELW
054	Mo Lcd Dryer 2	22,034	tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Leached Moly Tons / 2 dryers)	ELW
058	Roasting (Main)	25,635	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Roaster 1 & 2)	ELW
058	Roasting (Main) Natural Gas	113,177,529	Cubic Feet	Natural Gas Usage Summary - Sierrita (Roasting)	Accounting (R. Deming)
059	Cannery - throughput (FARR)	33,824	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Moly Oxide Packaged + Moly Sulfide Packaged)	
	Total Natural Gas Usage	250,232,296	Cubic Feet	Natural Gas Usage Summary - Sierrita (Total Usage)	
062-Misc	Remaining Natural Gas Fired Sources	62,502,313	Cubic Feet	Sierrita Total Natural Gas Usage - all other sources (Moly Briiquette Heater (3.5MM) Mine Truck Wash (1.0 MM)	Accounting (F. Brown)
062-062	East Parker Boiler - Moly Leach Heating (primary)	529,800	Cubic Feet	Monthly Gas Meter Readings (East Boiler)	EI
062-064	East Hot-oil Heater "Moly Dryer Oil Heating System 2"	106,300	Cubic Feet	Monthly Gas Meter Readings (East Therminol Heater)	EI
062-065	West Hot-oil Heater "Moly Dryer Oil Heating System 1"	343,800	Cubic Feet	Monthly Gas Meter Readings (West Therminal Heater)	EI
062-080	Rh Plant Heater	46,500	Cubic Feet	Monthly Gas Meter Readings (Rhenium Plant)	EI
062-081	Change Room Boiler (2.0 MM Btu/hr Capacity)	8,760,000	Cubic Feet	Estimated at 50% of Rated Capacity	
062-082	SX-1 Parker Boiler	0	Cubic Feet	Not in use	
062-083	Zinc Pot (0.6 MM Btu/hr Capacity)	0	Cubic Feet	Estimated at 25% of Rated Capacity - Not in Use	
062-084	W Parker Boiler (Moly Leach Heating Backup)	28,000	Cubic Feet	Monthly Gas Meter Readings (West Boiler)	EI
062-091	Twin Buttes SXEW Natural Gas Usage	51,598,054	Cubic Feet	Enter Monthly Values here from SW Gas Usage rate - Source ID 099	
062-091	Twin Buttes Boiler - EW Electrolyte Heater	38,698,541	Cubic Feet	75% of SW Gas Usage rate - Source ID 099 (1 therm = 100cf)	
062-098	Moly Autoclave Boiler (2.0 MM Btu/hr Capacity)	13,140,000	Cubic Feet	75% of capacity of boiler	

Freeport-McMoRan Sierrita Inc.
Data Input Summary

SIERRITA I.D.	Description	Process Thruput	Unit	Document/Value Source	Contact Department
062-099	TB Parker Boiler (3MM Btu/hr Capacity) - EW Cathode Wash Heater	12,899,514	Cubic Feet	SW Gas Usage rate - Source ID 099 (1 therm = 100cf) Divide total TB SXEW by 4. 1/4 goes to boiler 099 and 3/4 goes to 091.	
TBD-1	New Parker Boiler				
063	Lime Handling	59,153	Tons	Lime Handling Monthly Environmental Reports	
066	Blasting Ops. # Blasts above 3850 Elevation	41	# Blasts	Total Blasts x % blasts above pit lip (3850 elevation)	
	Total # Blasts	738		Monthly Blasting Reports	Mine (Mark DeLaat)
	% Blasts above 3850 elevation	0.06		Blast/Dump Reconcilliation Rpt - % Loaded above 3850 Elevation	Barye Herndon - Mining Dept.
066	Blasting Ops.	7,945	Tons ANFO	Southwest Energy Letter (Total Ammonium Nitrate Products Blasted)	Southwest Energy - Jerry Harris
069	B2 to B3 Transfer	20,584,453	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (6A Primary Throughput)	ELW
072	A3 Conveyor to pile	20,584,453	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (6A Primary Throughput)	ELW
073	Cu Conc. Stockpile	290,961	Tons	December Monthly Operating Report (Moly Cost Summary Copper Concentrate)	Accounting (F. Brown)
075	Scalping Screens, DC#10		Tons	Unit shut down 9/23/11	ELW
076	SX 1,2,3	N/A		Flow is constant, no annual change in emissions.	
077	Unpaved Roads	See Spreadsheet 077			
077	Haul Truck Mileage	1,521,654	Miles	Haul Truck Mileage Report, Dispatch	Chad Hoops / Charlie Orr - Mining Dept.
077	Water Truck Mileage (190 Ton)	158,587	Miles	Large Vehicle Hour/Mileage Report	(S. Sprague) Mine Ops Assistant
077	Water Truck Mileage (40 Ton)	16,720	Miles	Large Vehicle Hour/Mileage Report	(S. Sprague) Mine Ops Assistant
077	Rubber Tire Dozer Mileage	154,410	Miles	Large Vehicle Hour/Mileage Report	(S. Sprague) Mine Ops Assistant
077	Motor Graders (2x16G)	53,540	Miles	Large Vehicle Hour/Mileage Report	(S. Sprague) Mine Ops Assistant
077	Motor Graders (2x14G)	0	Miles	Large Vehicle Hour/Mileage Report	(S. Sprague) Mine Ops Assistant
078	Gasoline Storage Tanks	218,707	Gallons	SAP Usage Information Report, Stock Code: 005579693	Ellipse
087	Sierrita Tailings	603	Active Drying Area	Total Acreage of Tailing Dam(Toe of Sierrita Tailings) /6	G. Pitts/ A. Velasco
088	Drilling Operations	4,817,023	Tons	Total amount "loaded" above 3850ft considered to be amount drilled above 3850ft as conservative estimate	
089	Ammonium Nitrate Storage	19,263,740	lbs	Ellipse Usage Information Report - Prill stock code: 005563861	
093	Road Rock Crusher	932	Hours	El Jay Crusher Monthly Environmental Reports	Mine
093	Road Rock Crusher	254,739	Tons	El Jay Crusher Monthly Environmental Reports	Mine
093	Road Rock Crusher	273	Feed Rate (Tons/Hour)	El Jay Crusher Monthly Environmental Reports - Total annual tons / total annual hours	Mine
095	A2 to A3 Transfer	19,279,042	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (6B Primary Throughput)	ELW

Freeport-McMoRan Sierrita Inc.
Data Input Summary

SIERRITA I.D.	Description	Process Thruput	Unit	Document/Value Source	Contact Department
096	B3 to B4 Transfer	19,279,042	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (6B Primary Throughput)	ELW
102	B4 Stacker	19,279,042	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (6B Primary Throughput)	ELW
105	Twin Buttes Electrowinning		Gallons	SX PLS Flow to TB Tankhouse	SX/EW - Jody Beck
113	Primary Crushing. 6A/6B (Scrubber)	33,736,424	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Primary Crushing Total - removed from service 11/9/12, throughput is from 1/1/12 - 11/8/12	ELW
113A	Primary Crushing 6A	3,132,918		Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Primary Crushing 6A - A-Side FARR installed 11/9/12, throughput is from 11/9/12 - 12/31/12)	
113B	Primary Crushing 6B	2,994,153		Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (Primary Crushing 6B -B-Side FARR installed 11/9/12, throughput is from 11/9/12 - 12/31/12)	
117	MoS2 Loadout	0	tons	Moly Sulfide Loadout SC - #2 Throughput - Title V Monthly Records Spreadsheet	Moly / Title V Records
118	Moly Leach Plant	Wet Process			
118	Moly Leach Plant - Trimer Run Time	8,784	Hours		
119	Rhenium Recovery	Wet Process			
119	Rhenium DE Hopper & Screw Conveyor	0.00	tons	Rhenium DE Hopper & SC Report - Title V Monthly Records Spreadsheet	Moly / Title V Records
121	Fine Crushing Plant - No. 12 Scrubber	15,289,964	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (8-B Belt Tons) - removed from service 5/24/12, throughput covers 1/1/12-5/23/12	ELW
123	Decant Handling Facility	0	Tons	Decant Summary Report (Title V Records)	ELW / Mill
124	Portable Screen Plant - tons material throughput	8,017	Tons	Magnetic Steel Recovery Plant Report (Title V Records)	CMP
124	Portable Screen Plant - hours of operation	58	Hours	Magnetic Steel Recovery Plant Report (Title V Records)	CMP
125	Magnetic Steel Recovery System	8,017	Tons	Magnetic Steel Recovery Plant Report (Title V Records)	CMP
126	Tailing Thickener Generator - Diesel, less than 600 HP	125.3	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Mill Reservoir Fire Water Pump - Natural Gas	1.4	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Moly Roaster Emergency Generator - Natural Gas	19.1	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	CEMS Emergency Generator - Natural Gas	35.9	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	#3 Headwall Generator - Subject to NSPS Subpart IIII	34.0	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Twin Buttes Emergency Fire Water Back-Up - Diesel, less than 600 HP	0.0	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Radio Hill Generator - Propane	49.7	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Love Shack Generator - Propane	0.3	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Dispatch Tower Generator #1 - Propane	24.7	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Dispatch Tower Generator #2 - Propane	0.0	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Mine Engineering Generator - Propane	24.8	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Administration Building Generator - Natural Gas	86.0	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Mine Truck Shop Fire Water Pump - Diesel, less than 600 HP	56.6	hours	Data from Monthly Title V Records - Generator Hours	ELW

Freeport-McMoRan Sierrita Inc.
Data Input Summary

SIERRITA I.D.	Description	Process Thruput	Unit	Document/Value Source	Contact Department
126	Primary Crusher Generator - Propane	32.0	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	SCC Emergency Generator - Natural Gas	36.1	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Taillings Dam Pumping Station Generator - Diesel	22.8	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Twin Buttes Radio Hill Generator - Propane	85.5	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	Twin Buttes Sandcastle Generator - Propane	50.5	hours	Data from Monthly Title V Records - Generator Hours	ELW
126	West Robo Shack Generator - Propane	-	hours	Not in operation during this reporting year	
126	Truck Shop Generator - Propane	-	hours	Not in operation during this reporting year	
	Fine Crushing Plant Potential Throughput	42,591,120	Tons		
201	#1 Secondary Crusher Throughput	9,048,391	tons	Data from Monthly Title V Records - #1 Secondary Throughput	
202	#2 Secondary Crusher Throughput	10,096,226	tons	Data from Monthly Title V Records - #2 Secondary Throughput	
203	#3 Secondary Crusher Throughput	10,005,315	tons	Data from Monthly Title V Records - #3 Secondary Throughput	
204	#4 Secondary Crusher Throughput	10,007,667	tons	Data from Monthly Title V Records - #4 Secondary Throughput	
301	#1 Tertiary Crusher Throughput	1,978,549	tons	Data from Monthly Title V Records - #1 Tertiary Throughput	
302	#2 Tertiary Crusher Throughput	2,022,899	tons	Data from Monthly Title V Records - #2 Tertiary Throughput (#2T FARR installed: 7/16/11)	
303	#3 Tertiary Crusher Throughput	2,022,974	tons	Data from Monthly Title V Records - #3 Tertiary Throughput (#3T FARR installed: 6/13/11)	
304	#4 Tertiary Crusher Throughput	2,259,702	tons	Data from Monthly Title V Records - #4 Tertiary Throughput (#4T FARR installed: 9/2/11)	
305	#5 Tertiary Crusher Throughput	1,973,069	tons	Data from Monthly Title V Records - #5 Tertiary Throughput (#5T FARR installed: 8/24/11)	
306	#6 Tertiary Crusher Throughput	2,053,533	tons	Data from Monthly Title V Records - #6 Tertiary Throughput (#6T FARR installed: 9/23/11)	
307	#7 Tertiary Crusher Throughput	1,895,028	tons	Data from Monthly Title V Records - #7 Tertiary Throughput (#7T FARR installed: 9/19/11)	
308	#8 Tertiary Crusher Throughput	2,146,068	tons	Data from Monthly Title V Records - #8 Tertiary Throughput (#8T FARR installed: 9/29/11)	
309	#9 Tertiary Crusher Throughput	1,814,096	tons	Data from Monthly Title V Records - #9 Tertiary Throughput (#9T FARR installed: 10/20/11)	
310	#10 Tertiary Crusher Throughput	1,519,532	tons	Data from Monthly Title V Records - #10 Tertiary Throughput (#10T FARR installed: 10/27/11)	
311	8D/8B Transfer Point Throughput	23,354,354	tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (8-B Belt Tons) - unit installed 5/24/12, throughput covers 5/24/12-12/31/12	
312	Fine Crushing Throughput		tons		
TBD-2	Gasoline Dispensing Throughput	400,000	Gallons	Daily Throughputs of gasoline dispensing	
058	CEMS - SO2 Emissions	70.80	Tons	Monthly Throughputs from PI for Sources Subject to the Req. of Title V 42862, B Section II.J &K (SO2 from Roasting)	ELW
058	CEMS - Average SO2 Emission Rate	16.12	lb/hr	SO2 * 2000 / total possible Hours of operation	ELW
Other	PAX Usage	403,883.00	lbs	Sierrita Reagant Report	Mill
Other	PAX Usage per day of reporting period	1,103.51	lbs/day	Sierrita Reagant Report	Mill

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 009
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations, & Sierrita 8B to 8C conveyor transfer point. This part of operations is exhausted by 8 Mikro Pulseaire fabric filters and a FARR Cartridge-Type Dust Collector.
#1 Fine Ore Bin FARR unit - installed 3/16/10
OPERATION 208, PROCESS 421, SOURCE 010

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	--	0.9935	0.1200 **0.000020** lb/ton rock	42,591,120 tons rock/yr	0.4259	Source Test 10/24/13
PM-10	Non-Fugitive Point Source			0.9935	0.0600 **0.000020** lb/ton rock	42,591,120 tons rock/yr	0.4259	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source			n/c	**--** **0.00000300** lb/ton rock	42,591,120 tons rock/yr	0.0639	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	**--**	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	**--**	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	**--**	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	**--**	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		5.24198E-06	
Arsenic Compounds					0.001200		5.11093E-06	
Beryllium Compounds					0.000100		4.25911E-07	
Cadmium Compounds					0.000050		2.12956E-07	
Chromium Compounds					0.014577		6.20847E-05	
Cobalt Compounds					0.000623		2.65375E-06	
Lead Compounds					0.003000		1.27773E-05	
Manganese Compounds					0.023238		9.89752E-05	
Mercury Compounds					0.000002		7.84893E-09	
Nickel Compounds					0.001077		4.58674E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0002*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2.Max thruput based on Fine Crushing Plant Capacity - this unit controls the 8B/8C Transfer Point as well as 1/9th of the Fine Ore Bin.
3. Controlled emission factor based on source test 7/13/10, 0.018 pph / 6180 tph
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage from 3/16/10 - 12/31/10.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 010
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors #2 Fine Ore Bin FARR
OPERATION 208, PROCESS 421, SOURCE 010

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	--	0.9935	**0.00002** lb/ton rock	4,732,347 tons rock/yr	0.0473	Source Test 10/11/12
PM-10	Non-Fugitive Point Source	SN 26530-1		0.9935	**0.00002** lb/ton rock	4,732,347 tons rock/yr	0.0473	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.000003** lb/ton rock	4,732,347 tons rock/yr	0.0071	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		5.82443E-07	
Arsenic Compounds					0.001200		5.67882E-07	
Beryllium Compounds					0.000100		4.73235E-08	
Cadmium Compounds					0.000050		2.36617E-08	
Chromium Compounds					0.014577		6.89831E-06	
Cobalt Compounds					0.000623		2.94862E-07	
Lead Compounds					0.003000		1.4197E-06	
Manganese Compounds					0.023238		1.09972E-05	
Mercury Compounds					0.000002		8.72104E-10	
Nickel Compounds					0.001077		5.09637E-07	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.000021*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2.Actual emissions accounts for 1/9 of total throughput .
3. Emissions calculations based on intial testing
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage / 9.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 011
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors. #3 Fine Ore Bin FARR
OPERATION 208, PROCESS 421, SOURCE 011

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	--	0.9935	0.1200 **0.000016** lb/ton rock	4,732,347 tons rock/yr	0.0379	AP-42 Table 11.24-2, 1/95 Source Test 10/12/12
PM-10	Non-Fugitive Point Source	SN 26530-1		0.9935	0.0600 **0.000016** lb/ton rock	4,732,347 tons rock/yr	0.0379	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source			n/c	**--** **0.000002** lb/ton rock	4,732,347 tons rock/yr	0.0057	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	**--**	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	**--**	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	**--**	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	**--**	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		4.65954E-07	
Arsenic Compounds					0.001200		4.54305E-07	
Beryllium Compounds					0.000100		3.78588E-08	
Cadmium Compounds					0.000050		1.89294E-08	
Chromium Compounds					0.014577		5.51864E-06	
Cobalt Compounds					0.000623		2.35889E-07	
Lead Compounds					0.003000		1.13576E-06	
Manganese Compounds					0.023238		8.7978E-06	
Mercury Compounds					0.000002		6.97683E-10	
Nickel Compounds					0.001077		4.0771E-07	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.000017*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2.Actual emissions accounts for 1/9 of total throughput .
3. emission factor based on source test
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 012
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors. #4 Fine Ore Bin FARR
OPERATION 208, PROCESS 421, SOURCE 012

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	--	0.9935	0.1200 **0.000035** lb/ton rock	4,732,347 tons rock/yr	0.0828	AP-42 Table 11.24-2, 1/95 Source Test 10/12/12
PM-10	Non-Fugitive Point Source	SN 26530-1		0.9935	0.0600 **0.000035** lb/ton rock	4,732,347 tons rock/yr	0.0828	PM-10 assumed = PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	**--** **0.00001** lb/ton rock	4,732,347 tons rock/yr	0.0124	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	**--**	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	**--**	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	**--**	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	**--**	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		1.01927E-06	
Arsenic Compounds					0.001200		9.93793E-07	
Beryllium Compounds					0.000100		8.28161E-08	
Cadmium Compounds					0.000050		4.1408E-08	
Chromium Compounds					0.014577		1.2072E-05	
Cobalt Compounds					0.000623		5.16008E-07	
Lead Compounds					0.003000		2.48448E-06	
Manganese Compounds					0.023238		1.92452E-05	
Mercury Compounds					0.000002		1.52618E-09	
Nickel Compounds					0.001077		8.91865E-07	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.000037*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
It was assumed to be applicable to PM emissions as well.
2.Actual emissions accounts for 1/9 of total throughput .
3. Controlled emission factor based on source test on #4 baghouse on 8/6/10.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage / 9.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 013
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors. #5 Fine Ore Bin FARR
OPERATION 208, PROCESS 421, SOURCE 013

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	--	0.9935	0.1200 **0.000011** lb/ton rock	4,732,347 tons rock/yr	0.0260	AP-42 Table 11.24-2, 1/95 Source Test 10/15/12
PM-10	Non-Fugitive Point Source	SN 26530-1		0.9935	0.0600 **0.000011** lb/ton rock	4,732,347 tons rock/yr	0.0260	PM-10 assumed = PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	**--** **0.000002** lb/ton rock	4,732,347 tons rock/yr	0.0039	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	**--**	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	**--**	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	**--**	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	**--**	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		3.20343E-07	
Arsenic Compounds					0.001200		3.12335E-07	
Beryllium Compounds					0.000100		2.60279E-08	
Cadmium Compounds					0.000050		1.3014E-08	
Chromium Compounds					0.014577		3.79407E-06	
Cobalt Compounds					0.000623		1.62174E-07	
Lead Compounds					0.003000		7.80837E-07	
Manganese Compounds					0.023238		6.04849E-06	
Mercury Compounds					0.000002		4.79657E-10	
Nickel Compounds					0.001077		2.80301E-07	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.000012*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2.Actual emissions accounts for 1/9 of total throughput .
3. Controlled emission factor based on source test on #7 baghouse on 3/6/06. #7 Baghouse is identical to #2-6 and #8-9 Baghouses.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage / 9.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 014
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors. #6 Fine Ore Bin FARR
OPERATION 208, PROCESS 421, SOURCE 014

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	--	0.9935	0.1200 **0.000029** lb/ton rock	4,732,347 tons rock/yr	0.0686	AP-42 Table 11.24-2, 1/95 Source Test 10/15/12
PM-10	Non-Fugitive Point Source	SN 26530-1		0.9935	0.0600 **0.000029** lb/ton rock	4,732,347 tons rock/yr	0.0686	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source			n/c	**--** **0.0000044** lb/ton rock	4,732,347 tons rock/yr	0.0103	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	**--**	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	**--**	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	**--**	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	**--**	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		8.44542E-07	
Arsenic Compounds					0.001200		8.23428E-07	
Beryllium Compounds					0.000100		6.8619E-08	
Cadmium Compounds					0.000050		3.43095E-08	
Chromium Compounds					0.014577		1.00025E-05	
Cobalt Compounds					0.000623		4.27549E-07	
Lead Compounds					0.003000		2.05857E-06	
Manganese Compounds					0.023238		1.5946E-05	
Mercury Compounds					0.000002		1.26455E-09	
Nickel Compounds					0.001077		7.38974E-07	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.000031*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2.Actual emissions accounts for 1/9 of total throughput .
3. Controlled emission factor based on source test on #7 baghouse on 3/6/06. #7 Baghouse is identical to #2-6 and #8-9 Baghouses.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage / 9.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 015
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors. #7 Fine Ore Bin FARR
OPERATION 208, PROCESS 421, SOURCE 015

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	--	0.9935	0.1200 **0.000003** lb/ton rock	4,732,347 tons rock/yr	0.0071	AP-42 Table 11.24-2, 1/95 Source Test 10/19/12
PM-10	Non-Fugitive Point Source	SN 26530-1		0.9935	0.0600 **0.000003** lb/ton rock	4,732,347 tons rock/yr	0.0071	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00000045** lb/ton rock	4,732,347 tons rock/yr	0.0011	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		8.73664E-08	
Arsenic Compounds					0.001200		8.51822E-08	
Beryllium Compounds					0.000100		7.09852E-09	
Cadmium Compounds					0.000050		3.54926E-09	
Chromium Compounds					0.014577		1.03475E-06	
Cobalt Compounds					0.000623		4.42292E-08	
Lead Compounds					0.003000		2.12956E-07	
Manganese Compounds					0.023238		1.64959E-06	
Mercury Compounds					0.000002		1.30816E-10	
Nickel Compounds					0.001077		7.64456E-08	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.000003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2.Actual emissions accounts for 1/9 of total throughput .
3. Controlled emission factor based on source test on #7 baghouse on 3/6/06. #7 Baghouse is identical to #2-6 and #8-9 Baghouses.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage / 9.
6. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B
7. Installed 6/28/12
8. Throughput: 6/28/12 - 12/31/12

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 016
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors. #8 Fine Ore Bin FARR
OPERATION 208, PROCESS 421, SOURCE 016

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	--	0.9935	0.1200 **0.000023** lb/ton rock	4,732,347 tons rock/yr	0.0544	AP-42 Table 11.24-2, 1/95 Source Test 10/19/12
PM-10	Non-Fugitive Point Source	SN 26530-1		0.9935	0.0600 **0.000023** lb/ton rock	4,732,347 tons rock/yr	0.0544	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source			n/c	**--** **0.0000035** lb/ton rock	4,732,347 tons rock/yr	0.0082	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	**--**	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	**--**	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	**--**	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	**--**	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		6.69809E-07	
Arsenic Compounds					0.001200		6.53064E-07	
Beryllium Compounds					0.000100		5.4422E-08	
Cadmium Compounds					0.000050		2.7211E-08	
Chromium Compounds					0.014577		7.93305E-06	
Cobalt Compounds					0.000623		3.39091E-07	
Lead Compounds					0.003000		1.63266E-06	
Manganese Compounds					0.023238		1.26468E-05	
Mercury Compounds					0.000002		1.00292E-09	
Nickel Compounds					0.001077		5.86083E-07	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.000025*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2.Actual emissions accounts for 1/9 of total throughput .
3. Controlled emission factor based on source test on #7 baghouse on 3/6/06. #7 Baghouse is identical to #2-6 and #8-9 Baghouses.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage / 9.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE STORAGE BIN OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 017
SCC: 3-03-024-04

Operation description:

Sierrita fine ore storage bin operations. This part of operations is exhausted by 9 FARR Cartridge-Type Dust Collectors. #9 Fine Ore Bin Baghouse
OPERATION 208, PROCESS 421, SOURCE 017

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filter 3000 acfm	--	0.9935	0.1200 **0.000020** lb/ton rock	4,732,347 tons rock/yr	0.0463	AP-42 Table 11.24-2, 1/95 Average of source tests for 010-016 FARR units
PM-10	Non-Fugitive Point Source	SN 26530-1		0.9935	0.0600 **0.000020** lb/ton rock	4,732,347 tons rock/yr	0.0463	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source			n/c	**--** **0.0000029** lb/ton rock	4,732,347 tons rock/yr	0.0069	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	**--**	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	**--**	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	**--**	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	**--**	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		5.69962E-07	
Arsenic Compounds					0.001200		5.55713E-07	
Beryllium Compounds					0.000100		4.63094E-08	
Cadmium Compounds					0.000050		2.31547E-08	
Chromium Compounds					0.014577		6.75048E-06	
Cobalt Compounds					0.000623		2.88543E-07	
Lead Compounds					0.003000		1.38928E-06	
Manganese Compounds					0.023238		1.07616E-05	
Mercury Compounds					0.000002		8.53416E-10	
Nickel Compounds					0.001077		4.98717E-07	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.000021*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code. It was assumed to be applicable to PM emissions as well.
2.Actual emissions accounts for 1/9 of total throughput .
3. Controlled emission factor based on source test on #7 baghouse on 3/6/06. #7 Baghouse is identical to #2-6 and #8-9 Baghouses.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput calculated as 8B-Belt tonnage / 9.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 018
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#0 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 018

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.0006** lb/ton rock	2,661,945 tons rock/yr	0.7731	AP-42 Table 11.24-2, 1/95 Compliance Testing/Report See Note 4
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	2,661,945 tons rock/yr	0.3865	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00009** lb/ton rock	2,661,945 tons rock/yr	0.1160	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		9.51475E-06	
Arsenic Compounds					0.001200		9.27688E-06	
Beryllium Compounds					0.000100		7.73073E-07	
Cadmium Compounds					0.000050		3.86537E-07	
Chromium Compounds					0.014577		0.00011269	
Cobalt Compounds					0.000623		4.81684E-06	
Lead Compounds					0.003000		2.31922E-05	
Manganese Compounds					0.023238		0.00017965	
Mercury Compounds					0.000002		1.42466E-08	
Nickel Compounds					0.001077		8.3254E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 2/24/04. 0.106 PPH / 321.5 TPH = 0.0003297 lbs/ton
5. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #0 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 019
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#1 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 019

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.0011** lb/ton rock	2,661,945 tons rock/yr	1.4508 From 16 stacks	AP-42 Table 11.24-2, 1/95 Source Test - 4/13/10
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0005** lb/ton rock	2,661,945 tons rock/yr	0.7254 From 16 stacks	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00016** lb/ton rock	2,661,945 tons rock/yr	0.2176	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		1.78555E-05	
Arsenic Compounds					0.001200		1.74091E-05	
Beryllium Compounds					0.000100		1.45076E-06	
Cadmium Compounds					0.000050		7.2538E-07	
Chromium Compounds					0.014577		0.000211476	
Cobalt Compounds					0.000623		9.03935E-06	
Lead Compounds					0.003000		4.35228E-05	
Manganese Compounds					0.023238		0.000337134	
Mercury Compounds					0.000002		2.67354E-08	
Nickel Compounds					0.001077		1.56236E-05	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0007*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 4/13/10. 0.24 PPH / 208 TPH = 0.00109 lbs/ton
5. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #1 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 020
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#2 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 020

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	**0.0005** lb/ton rock	2,661,945 tons rock/yr	0.6256 From 16 stacks	Source Test: 10/19/09
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	**0.0002** lb/ton rock	2,661,945 tons rock/yr	0.3128 From 16 stacks	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	**--** **0.00007** lb/ton rock	2,661,945 tons rock/yr	0.0938	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	**--**	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	**--**	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	**--**	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	**--**	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		7.69916E-06	
Arsenic Compounds					0.001200		7.50668E-06	
Beryllium Compounds					0.000100		6.25557E-07	
Cadmium Compounds					0.000050		3.12779E-07	
Chromium Compounds					0.014577		9.1187E-05	
Cobalt Compounds					0.000623		3.8977E-06	
Lead Compounds					0.003000		1.87667E-05	
Manganese Compounds					0.023238		0.00014537	
Mercury Compounds					0.000002		1.15281E-08	
Nickel Compounds					0.001077		6.73677E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. Actual throughput is total throughput for #2 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 021
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#3 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 021

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	**0.0005** lb/ton rock	2,661,945 tons rock/yr	0.6256 From 16 stacks	Source Test: 10/20/09
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	**0.0002** lb/ton rock	2,661,945 tons rock/yr	0.3128 From 16 stacks	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00007** lb/ton rock	2,661,945 tons rock/yr	0.0938	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		7.69916E-06	
Arsenic Compounds					0.001200		7.50668E-06	
Beryllium Compounds					0.000100		6.25557E-07	
Cadmium Compounds					0.000050		3.12779E-07	
Chromium Compounds					0.014577		9.1187E-05	
Cobalt Compounds					0.000623		3.8977E-06	
Lead Compounds					0.003000		1.87667E-05	
Manganese Compounds					0.023238		0.00014537	
Mercury Compounds					0.000002		1.15281E-08	
Nickel Compounds					0.001077		6.73677E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 10/20/09. 0.12 PPH / 264 TPH = 0.00047bs/ton
5. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 022
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#4 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 022

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.0006** lb/ton rock	2,661,945 tons rock/yr	0.7986 From 16 stacks	Source Test: 10/20/09
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	2,661,945 tons rock/yr	0.3993 From 16 stacks	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00009** lb/ton rock	2,661,945 tons rock/yr	0.1198	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		9.82872E-06	
Arsenic Compounds					0.001200		9.583E-06	
Beryllium Compounds					0.000100		7.98584E-07	
Cadmium Compounds					0.000050		3.99292E-07	
Chromium Compounds					0.014577		0.000116409	
Cobalt Compounds					0.000623		4.97579E-06	
Lead Compounds					0.003000		2.39575E-05	
Manganese Compounds					0.023238		0.000185579	
Mercury Compounds					0.000002		1.47168E-08	
Nickel Compounds					0.001077		8.60013E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0004*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 10/20/09. 0.17 PPH / 276 TPH = 0.00060bs/ton
5. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 023
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#5 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 023

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.00096** lb/ton rock	2,661,945 tons rock/yr	1.2777 From 16 stacks	Source Test: 8/13/10
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0005** lb/ton rock	2,661,945 tons rock/yr	0.6389 From 16 stacks	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00014** lb/ton rock	2,661,945 tons rock/yr	0.1917	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		1.5726E-05	
Arsenic Compounds					0.001200		1.53328E-05	
Beryllium Compounds					0.000100		1.27773E-06	
Cadmium Compounds					0.000050		6.38867E-07	
Chromium Compounds					0.014577		0.000186254	
Cobalt Compounds					0.000623		7.96126E-06	
Lead Compounds					0.003000		3.8332E-05	
Manganese Compounds					0.023238		0.000296926	
Mercury Compounds					0.000002		2.35468E-08	
Nickel Compounds					0.001077		1.37602E-05	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0006*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 8/13/10.
5. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #5 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 024
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#6 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 024

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.0002** lb/ton rock	2,661,945 tons rock/yr	0.2928 From 16 stacks	Source Test: 11/3/10.
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0001** lb/ton rock	2,661,945 tons rock/yr	0.1464 From 16 stacks	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00003** lb/ton rock	2,661,945 tons rock/yr	0.0439	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		3.60386E-06	
Arsenic Compounds					0.001200		3.51377E-06	
Beryllium Compounds					0.000100		2.92814E-07	
Cadmium Compounds					0.000050		1.46407E-07	
Chromium Compounds					0.014577		4.26833E-05	
Cobalt Compounds					0.000623		1.82446E-06	
Lead Compounds					0.003000		8.78442E-06	
Manganese Compounds					0.023238		6.80455E-05	
Mercury Compounds					0.000002		5.39614E-09	
Nickel Compounds					0.001077		3.15338E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0001*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 11/3/10.
5. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #6 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 025
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#7 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 025

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.0017** lb/ton rock	2,661,945 tons rock/yr	2.2760 From 16 stacks	Source Test: 8/12/10
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0009** lb/ton rock	2,661,945 tons rock/yr	1.1380 From 16 stacks	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00026** lb/ton rock	2,661,945 tons rock/yr	0.3414	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		2.80119E-05	
Arsenic Compounds					0.001200		2.73116E-05	
Beryllium Compounds					0.000100		2.27596E-06	
Cadmium Compounds					0.000050		1.13798E-06	
Chromium Compounds					0.014577		0.000331765	
Cobalt Compounds					0.000623		1.4181E-05	
Lead Compounds					0.003000		6.82789E-05	
Manganese Compounds					0.023238		0.000528899	
Mercury Compounds					0.000002		4.19427E-08	
Nickel Compounds					0.001077		2.45104E-05	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0010*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 8/12/10.
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #7 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 026
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#8 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 026

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.0005** lb/ton rock	2,661,945 tons rock/yr	0.6921 From 16 stacks	Source Test: 11/3/10.
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	2,661,945 tons rock/yr	0.3461 From 16 stacks	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00008** lb/ton rock	2,661,945 tons rock/yr	0.1038	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		8.51822E-06	
Arsenic Compounds					0.001200		8.30527E-06	
Beryllium Compounds					0.000100		6.92106E-07	
Cadmium Compounds					0.000050		3.46053E-07	
Chromium Compounds					0.014577		0.000100888	
Cobalt Compounds					0.000623		4.31235E-06	
Lead Compounds					0.003000		2.07632E-05	
Manganese Compounds					0.023238		0.000160835	
Mercury Compounds					0.000002		1.27545E-08	
Nickel Compounds					0.001077		7.45345E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 11/3/10.
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #8 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 027
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#9 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 027

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.0002** lb/ton rock	2,661,945 tons rock/yr	0.2662 From 16 stacks	AP-42 Table 11.24-2, 1/95 Source Test - 8/22/11
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0001** lb/ton rock	2,661,945 tons rock/yr	0.1331 From 16 stacks	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00003** lb/ton rock	2,661,945 tons rock/yr	0.0399	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		3.27624E-06	
Arsenic Compounds					0.001200		3.19433E-06	
Beryllium Compounds					0.000100		2.66195E-07	
Cadmium Compounds					0.000050		1.33097E-07	
Chromium Compounds					0.014577		3.8803E-05	
Cobalt Compounds					0.000623		1.6586E-06	
Lead Compounds					0.003000		7.98584E-06	
Manganese Compounds					0.023238		6.18595E-05	
Mercury Compounds					0.000002		4.90558E-09	
Nickel Compounds					0.001077		2.86671E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0001*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 2/24/04. 0.106 PPH / 321.5 TPH = 0.0003297 lbs/ton (Based on #1 Scrubber results, all 16 are identical)
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #9 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 028
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#10 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 028

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.0003** lb/ton rock	2,661,945 tons rock/yr	0.4126 From 16 stacks	AP-42 Table 11.24-2, 1/95 Source Test - 8/22/11
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0002** lb/ton rock	2,661,945 tons rock/yr	0.2063 From 16 stacks	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00005** lb/ton rock	2,661,945 tons rock/yr	0.0619	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		5.07817E-06	
Arsenic Compounds					0.001200		4.95122E-06	
Beryllium Compounds					0.000100		4.12601E-07	
Cadmium Compounds					0.000050		2.06301E-07	
Chromium Compounds					0.014577		6.01446E-05	
Cobalt Compounds					0.000623		2.57082E-06	
Lead Compounds					0.003000		1.2378E-05	
Manganese Compounds					0.023238		9.58822E-05	
Mercury Compounds					0.000002		7.60366E-09	
Nickel Compounds					0.001077		4.4434E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0002*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 2/24/04. 0.106 PPH / 321.5 TPH = 0.0003297 lbs/ton (Based on #1 Scrubber results, all 16 are identical)
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #10 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 029
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#11 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 029

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.0003** lb/ton rock	2,661,945 tons rock/yr	0.3594 From 16 stacks	AP-42 Table 11.24-2, 1/95 Source Test - 8/23/11
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0001** lb/ton rock	2,661,945 tons rock/yr	0.1797 From 16 stacks	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00004** lb/ton rock	2,661,945 tons rock/yr	0.0539	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		4.42292E-06	
Arsenic Compounds					0.001200		4.31235E-06	
Beryllium Compounds					0.000100		3.59363E-07	
Cadmium Compounds					0.000050		1.79681E-07	
Chromium Compounds					0.014577		5.2384E-05	
Cobalt Compounds					0.000623		2.23911E-06	
Lead Compounds					0.003000		1.07809E-05	
Manganese Compounds					0.023238		8.35103E-05	
Mercury Compounds					0.000002		6.62254E-09	
Nickel Compounds					0.001077		3.87006E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0002*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 2/24/04. 0.106 PPH / 321.5 TPH = 0.0003297 lbs/ton (Based on #1 Scrubber results, all 16 are identical)
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #11 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 030
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#12 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 030

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.0002** lb/ton rock	2,661,945 tons rock/yr	0.1996 From 16 stacks	AP-42 Table 11.24-2, 1/95 Source Test - 8/24/11
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0001** lb/ton rock	2,661,945 tons rock/yr	0.0998 From 16 stacks	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00002** lb/ton rock	2,661,945 tons rock/yr	0.0299	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		2.45718E-06	
Arsenic Compounds					0.001200		2.39575E-06	
Beryllium Compounds					0.000100		1.99646E-07	
Cadmium Compounds					0.000050		9.98229E-08	
Chromium Compounds					0.014577		2.91022E-05	
Cobalt Compounds					0.000623		1.24395E-06	
Lead Compounds					0.003000		5.98938E-06	
Manganese Compounds					0.023238		4.63946E-05	
Mercury Compounds					0.000002		3.67919E-09	
Nickel Compounds					0.001077		2.15003E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0001*	

Note:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 2/24/04. 0.106 PPH / 321.5 TPH = 0.0003297 lbs/ton (Based on #1 Scrubber results, all 16 are identical)
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #12 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 031
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#13 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 031

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.0006** lb/ton rock	2,661,945 tons rock/yr	0.7731 From 16 stacks	AP-42 Table 11.24-2, 1/95 Compliance Testing/Report See Note 4
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	2,661,945 tons rock/yr	0.3865 From 16 stacks	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00009** lb/ton rock	2,661,945 tons rock/yr	0.1160	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		9.51475E-06	
Arsenic Compounds					0.001200		9.27688E-06	
Beryllium Compounds					0.000100		7.73073E-07	
Cadmium Compounds					0.000050		3.86537E-07	
Chromium Compounds					0.014577		0.00011269	
Cobalt Compounds					0.000623		4.81684E-06	
Lead Compounds					0.003000		2.31922E-05	
Manganese Compounds					0.023238		0.00017965	
Mercury Compounds					0.000002		1.42466E-08	
Nickel Compounds					0.001077		8.3254E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0003*	

Note:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 2/24/04. 0.106 PPH / 321.5 TPH = 0.0003297 lbs/ton (Based on #1 Scrubber results, all 16 are identical)
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #13 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 032
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#14 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 032

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.0006** lb/ton rock	2,661,945 tons rock/yr	0.7731 From 16 stacks	AP-42 Table 11.24-2, 1/95 Compliance Testing/Report See Note 4
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	2,661,945 tons rock/yr	0.3865 From 16 stacks	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00009** lb/ton rock	2,661,945 tons rock/yr	0.1160	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		9.51475E-06	
Arsenic Compounds					0.001200		9.27688E-06	
Beryllium Compounds					0.000100		7.73073E-07	
Cadmium Compounds					0.000050		3.86537E-07	
Chromium Compounds					0.014577		0.00011269	
Cobalt Compounds					0.000623		4.81684E-06	
Lead Compounds					0.003000		2.31922E-05	
Manganese Compounds					0.023238		0.00017965	
Mercury Compounds					0.000002		1.42466E-08	
Nickel Compounds					0.001077		8.3254E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 2/24/04. 0.106 PPH / 321.5 TPH = 0.0003297 lbs/ton (Based on #1 Scrubber results, all 16 are identical)
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #14 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MILL FEED BELT SYSTEM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 033
SCC: 3-03-024-04

Operation description:

Sierrita mill feed belt system operations. This part of operations are exhausted by 16 Ducon wet dust collectors.
#15 Mill Wet Scrubber
OPERATION 208, PROCESS 422, SOURCE 033

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors UW4,Model III, 60	--	0.96	0.1200 **0.0006** lb/ton rock	2,661,945 tons rock/yr	0.7731 From 16 stacks	AP-42 Table 11.24-2, 1/95 Compliance Testing/Report See Note 4
PM-10	Non-Fugitive Point Source	SI 50 265 4000 -50 265 4015 (16 units)		0.96	0.0600 **0.0003** lb/ton rock	2,661,945 tons rock/yr	0.3865 From 16 stacks	PM-10 assumed = 50% PM AP-42 Table 11-19.2 (Note c)
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00009** lb/ton rock	2,661,945 tons rock/yr	0.1160	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		9.51475E-06	
Arsenic Compounds					0.001200		9.27688E-06	
Beryllium Compounds					0.000100		7.73073E-07	
Cadmium Compounds					0.000050		3.86537E-07	
Chromium Compounds					0.014577		0.00011269	
Cobalt Compounds					0.000623		4.81684E-06	
Lead Compounds					0.003000		2.31922E-05	
Manganese Compounds					0.023238		0.00017965	
Mercury Compounds					0.000002		1.42466E-08	
Nickel Compounds					0.001077		8.3254E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0003*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. Actual emissions accounts for 1/16 of total thru-put. Max capacity determined by Max capacity of Fine Crushing Plant = 42591120 / 16 scrubbers.
4. The actual controlled emission factor used is based on emission compliance testing 2/24/04. 0.106 PPH / 321.5 TPH = 0.0003297 lbs/ton (Based on #1 Scrubber results, all 16 are identical)
5. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
6. Actual throughput is total throughput for #15 Mill.

ESTIMATED AIR POLLUTANT EMISSIONS FROM UNLEACHED MOLYBDENUM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 041
SCC: 3-03-024-04

Operation description:
Unleached Molybdenum plant - three dryers. This part of operation is exhausted by 1 Ducon wet dust collector.

OPERATION 209, PROCESS 426, SOURCE 041

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors	--	n/c	**0.0096** lb/ton unl Mo conc	98,550 tons unl Mo conc/yr	0.4727	Source Test: 2/7/12
PM-10	Non-Fugitive Point Source	SI 60 621 40 (1 unit)		n/c	**0.0279** lb/ton unl Mo conc	98,550 tons unl Mo conc/yr	1.3766	Source Test: 2/7/12
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00288** lb/ton unl Mo conc	98,550 tons unl Mo conc/yr	0.1418	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC	Non-Fugitive Point Source	Ducon wet dust collectors	--	--	**5.0800** lbs/hr	8,760 hrs/yr	22.2504	Based on source test dated 1/13&17, 1997
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.002300		1.0872E-05	
Arsenic Compounds					0.006500		3.07252E-05	
Cadmium Compounds					0.001285		6.07177E-06	
Chromium Compounds					0.001300		6.14504E-06	
Cobalt Compounds					0.002800		1.32355E-05	
Lead Compounds					0.034500		0.00016308	
Manganese Compounds					0.001000		4.72695E-06	
Mercury Compounds					0.000050		2.36348E-07	
Nickel Compounds					0.001000		4.72695E-06	
Selenium Compounds					0.038800		0.000183406	
Total HAPs					*(%)*		*0.0004*	

Notes:
1. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide
2. Actual runtime of the wet scrubber used for VOC calculations

ESTIMATED AIR POLLUTANT EMISSIONS FROM UNLEACHED MOLYBDENUM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 042
SCC: 3-03-024-04

Operation description:

Unleached and Leached Molybdenum plant - three unleached and 2 leached moly sulfide concentrate bins. This part of operations is exhausted by 1 Micropulsaire fabric filter.
OPERATION 209, PROCESS 427, SOURCE 042

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Sulfide Thruput tons/yr	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filters SI 60 266 30,	--	Included	NA **0.0154** lb/ton	73,584 **8,760** tons unl Mo conc/yr hours of operation/yr	0.5666	Source Test Data - 4/1/15
PM-10	Non-Fugitive Point Source			Included	NA **0.0154** lb/ton	73,584 **8,760** tons unl Mo conc/yr hours of operation/yr	0.5666	Source Test Data - 4/1/15 Assume PM = PM10
PM-2.5	Non-Fugitive Point Source			n/c	**--** **0.00462** lb/ton	8,760 tons unl Mo conc/yr	0.0202	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	**--**	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	**--**	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	**--**	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	**--**	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.002300		1.30317E-05	
Arsenic Compounds					0.006500		3.68288E-05	
Cadmium Compounds					0.001285		7.27794E-06	
Chromium Compounds					0.001300		7.36576E-06	
Cobalt Compounds					0.002800		1.58647E-05	
Lead Compounds					0.034500		0.000195476	
Manganese Compounds					0.001000		5.66597E-06	
Mercury Compounds					0.000050		2.83298E-07	
Nickel Compounds					0.001000		5.66597E-06	
Selenium Compounds					0.038800		0.00021984	
Total HAPs					*(%)*		*0.0005073*	

Notes:
1. Maximum throughput limited to that of downstream sources: 8.4 tons/hr
2. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide
3. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).
4. EF is average of source test data for main and alternate baghouses. 0.00151 + 0.0038 / 2

ESTIMATED AIR POLLUTANT EMISSIONS FROM MOLY SULFIDE DUMP HOPPER
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 044	
SCC: 3-05-024-99	

Operation Description:

Moly Sulfide Dump Hopper - 3 hoppers

OPERATION , PROCESS , SOURCE 044

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max Annual Production tons/yr	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source			0.1892 lb/ton	73,584 tons/yr	6.9610464	Source Test - 4/7/15
PM-10	Non-Fugitive Point Source			0.0946 lb/ton	73,584 tons/yr	3.4805232	Source Test - 4/7/15
PM-2.5	Non-Fugitive Point Source			0.05676 lb/ton	73,584 tons/yr	2.08831392	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--		--	--	--	--
Carbon Monoxide (not anticipated)	--	--		--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--		--	--	--	--
Non-Methane VOC (not anticipated)	--	--		--	--	--	--
HAPs							
Hazardous Air Pollutants found in Particulate Matter:							
Antimony Compounds				0.002300		0.000160104	
Arsenic Compounds				0.006500		0.000452468	
Cadmium Compounds				0.001285		8.94146E-05	
Chromium Compounds				0.001300		9.04936E-05	
Cobalt Compounds				0.002800		0.000194909	
Lead Compounds				0.034500		0.002401561	
Manganese Compounds				0.001000		6.96105E-05	
Mercury Compounds				0.000050		3.48052E-06	
Nickel Compounds				0.001000		6.96105E-05	
Selenium Compounds				0.038800		0.002700886	
				(%)			
Total HAPs						*0.006232538*	

Notes:
1. This source was added to the Emission Inventory in 2003 (for 2002 emissions reporting).
2. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide
3. Emission Factor based on AP-42, Section 11.24-2 1/95 - Low Moisture.
4. Baghouse was added in 2007 on one hopper. There are three other hoppers that are uncontrolled.
5. Throughput calculated based on total material dumped into the oversize and PDC hoppers.
6. PM 2.5 calculated as 30% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM MOLY SULFIDE DUMP HOPPER
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 044A
SCC: 3-05-024-99

Operation Description:

Moly Sulfide Dump Hopper - 1 hopper w/ baghouse

OPERATION , PROCESS , SOURCE 044A

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	30,000 CFM Baghouse	0.99	0.12 **0.04458** lb/ton	73,584 tons/yr	1.64018736	Source Test - 6/15/10
PM-10	Non-Fugitive Point Source	30,000 CFM Baghouse	0.99	0.06 **0.02229** lb/ton	73,584 tons/yr	0.82009368	PM-10 = 50% PM AP-42, Section 11.24-2 1/95 - Low Moisture
PM-2.5	Non-Fugitive Point Source			0.013374 lb/ton	73,584 tons/yr	0.492056208	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--		--	--	--	--
Carbon Monoxide (not anticipated)	--	--		--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--		--	--	--	--
Non-Methane VOC (not anticipated)	--	--		--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:							
Antimony Compounds				0.002300		3.77243E-05	
Arsenic Compounds				0.006500		0.000106612	
Cadmium Compounds				0.001285		2.10682E-05	
Chromium Compounds				0.001300		2.13224E-05	
Cobalt Compounds				0.002800		4.59252E-05	
Lead Compounds				0.034500		0.000565865	
Manganese Compounds				0.001000		1.64019E-05	
Mercury Compounds				0.000050		8.20094E-07	
Nickel Compounds				0.001000		1.64019E-05	
Selenium Compounds				0.038800 (%)		0.000636393	
Total HAPs						*0.001468534*	

Notes:
1. This source was added to the Emission Inventory in 2003 (for 2002 emissions reporting).
2. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide
3. Emission factor based on 99% control of AP-42 factor, Section 11.24-2 1/95 - Low Moisture
4. Baghouse was added in 2007 on one hopper. There are three other hoppers that are uncontrolled.

ESTIMATED AIR POLLUTANT EMISSIONS FROM #1 MOLY SULFIDE LOADOUT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 045
SCC: 3-05-024-01

Operation Description:

Moly Sulfide Screw Conveyor Loadout #1

OPERATION ID 209, PROCESS 461 , SOURCE 045

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Potential Emissions	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	None	0.01 lb/ton	87,600 tons/yr	0.438 tons/yr	AP-42, Section 11.24-2 1/95 - High Moisture
PM-10	Non-Fugitive Point Source	None	0.004 lb/ton	87,600 tons/yr	0.1752 tons/yr	AP-42, Section 11.24-2 1/95 - High Moisture
PM-2.5	Non-Fugitive Point Source		0.003 lb/ton	87,600 tons/yr	0.1314	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--
HAPs						
Hazardous Air Pollutants found in Particulate Matter:						
Antimony Compounds			0.002300		0.000010074	
Arsenic Compounds			0.006500		0.00002847	
Cadmium Compounds			0.001285		5.62611E-06	
Chromium Compounds			0.001300		0.000005694	
Cobalt Compounds			0.002800		0.000012264	
Lead Compounds			0.034500		0.00015111	
Manganese Compounds			0.001000		0.00000438	
Mercury Compounds			0.000050		0.000000219	
Nickel Compounds			0.001000		0.00000438	
Selenium Compounds			0.038800		0.000169944	
			(%)			
Total HAPs					*0.000392161*	

Notes:
1. This source was added to the Emission Inventory in 2003 (for 2002 emissions reporting).
2. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide
3. Emission Factor: AP-42 11/24-2 1/95 - High Moisture

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MOLYDENUM SULFIDE ROASTING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 048
SCC: 3-03-024-04

Operation description:

Sierrita moly oxide storage, screening and handling. This part of operations are exhausted by 1 Mikro Pulseaire fabric filter.
OPERATION 211, PROCESS 433, SOURCE 048

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Moly Oxide Thru-put	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Mikro Pulseaire fabric filters SI 60 266 00,	--	Included	NA **0.0360** **lb/ton**	73,584 **8,760** tons Mo oxide/yr hours of operation/yr	1.3230	Source Test Data - 4/9/15
PM-10	Non-Fugitive Point Source			Included	NA **0.0180** **lb/ton**	73,584 **8,760** tons Mo oxide/yr hours of operation/yr	0.6615	PM-10 = 50% PM
PM-2.5	Non-Fugitive Point Source				NA **0.0108** **lb/ton**	73,584 **8,760** tons Mo oxide/yr hours of operation/yr	0.3969	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs	--	--	--	--	--	--	--	--
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.004000		5.29216E-05	
Arsenic Compounds					0.006500		8.59976E-05	
Cadmium Compounds					0.005100		6.74751E-05	
Chromium Compounds					0.002500		3.3076E-05	
Cobalt Compounds					0.004000		5.29216E-05	
Lead Compounds					0.032000		0.000423373	
Manganese Compounds					0.006000		7.93824E-05	
Mercury Compounds					0.000100		1.32304E-06	
Nickel Compounds					0.002000		2.64608E-05	
Selenium Compounds					0.004000		5.29216E-05	
Total HAPs							*0.000875853*	

Notes:
1. Maximum throughput 12tph but limited on roaster max throughput of 8.4tph
2. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Oxide
3. Emission Factor based on source test 6/13/07, 0.31 pph / 5.28 tph

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MOLYBDENUM LEACH OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 053
SCC: 3-03-024-11

Operation description:

Sierrita leached moly operations - Three sets of 2 dryers. This part of operations are exhausted by 2 Ducon wet dust collectors.
Maximum Throughput: 12 tons/hr, 4 tons/hr per each set of dryers, #1 Wet Scrubber
OPERATION 210, PROCESS 430, SOURCE 053

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Moly Sulfide Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors	--	Included	0.018994 lb/ton lcd Mo conc	73,584 tons lcd Mo conc/yr	0.698827248	Source Test: 2/9/12
PM-10	Non-Fugitive Point Source	SI 60 621 3001 and 3002 (2 units)		Included	0.040494 lb/ton lcd Mo conc	73,584 tons lcd Mo conc/yr	1.489855248	Source Test: 2/9/12 - Method 202
PM-2.5	Non-Fugitive Point Source			n/c	-- 0.00570 lb/ton unl Mo conc	73,584 tons unl Mo conc/yr	0.2096	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC	Non-Fugitive Point Source	Ducon wet dust collectors	--	--	0.53 lbs/ton	73,584	19.49976	Based on source test dated 1/13&17, 1997
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.002300		1.6073E-05	
Arsenic Compounds					0.006500		4.54238E-05	
Cadmium Compounds					0.001285		8.97644E-06	
Chromium Compounds					0.001300		9.08475E-06	
Cobalt Compounds					0.002800		1.95672E-05	
Lead Compounds					0.034500		0.000241095	
Manganese Compounds					0.001000		6.98827E-06	
Mercury Compounds					0.000050		3.49414E-07	
Nickel Compounds					0.001000		6.98827E-06	
Selenium Compounds					0.038800		0.000271145	
					(%)			
Total HAPs							*0.000625691*	

Notes:
1. The thruput from the three sets of dryers is divided by 2. Half is apportioned to Source ID 053. Half is apportioned to Source ID 054. Only one scrubber can operate at a time.
2. pph = 0.068 PM, 0.874 PM10 (source test-11/3/09). Average feed rate to leach during test = 6.0 tph.
3. pph = 3.71 VOC, Average feed rate to leach during test = 7.0 tph, Jan 1997
4. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide
5. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).
6. Max Annual Throughput based on Minor Permit Revision for FeCl Leach expansion - 8.4tph

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA MOLYBDENUM LEACH OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 054
SCC: 3-03-024-11

Operation description:

Sierrita leached moly operations - Three sets of 2 dryers. This part of operations are exhausted by 2 Ducon wet dust collectors.
Maximum Throughput: 12 tons/hr, 4 tons/hr per each set of dryers
OPERATION 210, PROCESS 430, SOURCE 054

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Moly Sulfide Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors	--	0.96	0.006233 lb/ton lcd Mo conc	73,584 tons lcd Mo conc/yr	0.229324536 From 2 stacks	Source Test: 2/8/12
PM-10	Non-Fugitive Point Source	SI 60 621 3001 and 3002 (2 units)		0.96	0.025503 lb/ton lcd Mo conc	73,584 tons lcd Mo conc/yr	0.938306376 From 2 stacks	Source Test: 2/8/12 - Method 202
PM-2.5	Non-Fugitive Point Source			n/c	-- 0.00187 lb/ton unl Mo conc	73,584 tons unl Mo conc/yr	0.0688	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC	Non-Fugitive Point Source	Ducon wet dust collectors	--	--	0.53 lbs/ton	73,584	19.49976	Based on source test dated 1/13&17, 1997
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.002300		5.27446E-06	
Arsenic Compounds					0.006500		1.49061E-05	
Cadmium Compounds					0.001285		2.94567E-06	
Chromium Compounds					0.001300		2.98122E-06	
Cobalt Compounds					0.002800		6.42109E-06	
Lead Compounds					0.034500		7.9117E-05	
Manganese Compounds					0.001000		2.29325E-06	
Mercury Compounds					0.000050		1.14662E-07	
Nickel Compounds					0.001000		2.29325E-06	
Selenium Compounds					0.038800		8.89779E-05	
					(%)			
Total HAPs							*0.000205325*	

Notes:
1. The thruput from the three sets of dryers is divided by 2. Half is apportioned to Source ID 053. Half is apportioned to Source ID 054.
2. pph = 0.127 PM, 0.337 PM10 (source test-11/3/09). Avegrage feed rate to leach during test = 6.0 tph.
3. pph = 3.71 VOC, Average feed rate to leach during test = 7.0 tph. Jan 1997
4. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide

ESTIMATED AIR POLLUTANT EMISSIONS FROM MOLYBDENUM SULFIDE ROASTING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

	Operation description:
STACK : S 058	Sierrita moly sulfide roasting operations - roasters 1 and 2. During operations the roaster offgas is routed through the pollution control equipment then out the main stack.
SCC: 3-03-011-99	OPERATION 211, PROCESS 452, SOURCE 058

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Throughput	Potential Emissions (3)	Remarks
Particulate Matter (PM) Two multiple hearth roasters	Non-Fugitive Point Source	Cyclones (Buell) and Electrost.Precip.		n/c	0.367857 lb/ton sulfide	73,584 tons sulfide/yr	13.534 tons/yr	Source test results, Method 5 + 202 2/8/2013
PM-10 Two multiple hearth roasters	Non-Fugitive Point Source	Cyclones (Buell) and Electrost.Precip.	--	n/c	0.367857 lb/ton sulfide	73,584 tons sulfide/yr	13.534	Source test results, Method 5 + 202 2/8/2013
PM-2.5 Two multiple hearth roasters	Non-Fugitive Point Source	Cyclones (Buell) and Electrost.Precip.	--	n/c	0.202321 lb/ton sulfide	73,584 tons sulfide/yr	7.444	Buell manufacturer capture efficiency curve (cyclone) Babcock Wilcox - ESP manufacturer.
Sulfur Dioxide Two multiple hearth roasters Excess Emission Reports Total	Non-Fugitive Point Source	2 SCRUBBER (UOP Model 500)		n/c	16.12021858 PPH per CEMS	8,760 Hours/Year	70.607 70.607	CEMS
Carbon Monoxide Two multiple hearth roasters Combustion-derived emissions from 2 roasters	Non-Fugitive Point Source	--	--	N/A	-- 0.000084 lbs/cft	-- 298,577,600 cft/yr	-- 12.540	AP-42, Table 1.4-2, 7/98
Nitrogen Oxides (NOx) Two multiple hearth roasters Combustion-derived emissions from 2 roasters	Non-Fugitive Point Source	--	--	N/A	-- 0.0001 lbs/cft	-- 298,577,600 cft/yr	-- 14.929	AP-42, Table 1.4-2, 7/98
Non-Methane VOC Two multiple hearth roasters Combustion-derived emissions from 2 roasters	Non-Fugitive Point Source	--	--	N/A	-- 0.0000055 lbs/cft	-- 298,577,600 cft/yr	-- 0.821	AP-42, Table 1.4-3, 7/98
Stack ID 058 Continued								
HAPs Combustion-derived emissions from 2 roasters								
2-Methylnapthalene					2.4E-11	298,577,600	3.58293E-06	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene					1.8E-12	298,577,600	2.6872E-07	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene					1.6E-11	298,577,600	2.38862E-06	AP-42, Table 1.4-3, 7/98
Acenapthene					1.8E-12	298,577,600	2.6872E-07	AP-42, Table 1.4-3, 7/98

Acenapthylene					1.8E-12	298,577,600	2.6872E-07	AP-42, Table 1.4-3, 7/98
Anthracene					2.4E-12	298,577,600	3.58293E-07	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene					1.8E-12	298,577,600	2.6872E-07	AP-42, Table 1.4-3, 7/98
Benzene					2.1E-09	298,577,600	0.000313506	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene					1.2E-12	298,577,600	1.79147E-07	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene					1.8E-12	298,577,600	2.6872E-07	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene					1.2E-12	298,577,600	1.79147E-07	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene					1.8E-12	298,577,600	2.6872E-07	AP-42, Table 1.4-3, 7/98
Chrysene					1.8E-12	298,577,600	2.6872E-07	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene					1.2E-12	298,577,600	1.79147E-07	AP-42, Table 1.4-3, 7/98
Dichlorobenzene					1.2E-09	298,577,600	0.000179147	AP-42, Table 1.4-3, 7/98
Fluoranthene					3E-12	298,577,600	4.47866E-07	AP-42, Table 1.4-3, 7/98
Fluorene					2.8E-12	298,577,600	4.18009E-07	AP-42, Table 1.4-3, 7/98
Formaldehyde					0.000000075	298,577,600	0.01119666	AP-42, Table 1.4-3, 7/98
Hexane					0.0000018	298,577,600	0.26871984	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene					1.8E-12	298,577,600	2.6872E-07	AP-42, Table 1.4-3, 7/98
Napthalene					6.1E-10	298,577,600	9.10662E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene					1.7E-11	298,577,600	2.53791E-06	AP-42, Table 1.4-3, 7/98
Pyrene					5E-12	298,577,600	7.46444E-07	AP-42, Table 1.4-3, 7/98
Toluene					3.4E-09	298,577,600	0.000507582	AP-42, Table 1.4-3, 7/98
Arsenic					2E-10	298,577,600	2.98578E-05	AP-42, Table 1.4-3, 7/98
Beryllium					1.2E-11	298,577,600	1.79147E-06	AP-42, Table 1.4-3, 7/98
Cadmium					1.1E-09	298,577,600	0.000164218	AP-42, Table 1.4-3, 7/98
Chromium					1.4E-09	298,577,600	0.000209004	AP-42, Table 1.4-3, 7/98
Cobalt					8.4E-11	298,577,600	1.25403E-05	AP-42, Table 1.4-3, 7/98
Manganese					3.8E-10	298,577,600	5.67297E-05	AP-42, Table 1.4-3, 7/98
Mercury					2.6E-10	298,577,600	3.88151E-05	AP-42, Table 1.4-3, 7/98
Nickel					2.1E-09	298,577,600	0.000313506	AP-42, Table 1.4-3, 7/98
Selenium					2.4E-11	298,577,600	3.58293E-06	AP-42, Table 1.4-3, 7/98
					lbs/cft	cft/yr		
Subtotal (Natural Gas HAPs)							*0.282*	
HAP metals as % of PM								
Antimony Compounds					0.00315		0.000426327	
Arsenic Compounds					0.0065		0.000879723	
Cadmium Compounds					0.00319225		0.000432045	
Chromium Compounds					0.0019		0.00025715	
Cobalt Compounds					0.0034		0.000460163	
Lead Compounds					0.03325		0.00450012	
Manganese Compounds					0.0035		0.000473697	
Mercury Compounds					0.000075		1.01506E-05	
Nickel Compounds					0.0015		0.000203013	
Selenium Compounds					0.0214		0.002896318	
					(%)			
Subtotal (HAPs from PM)							*0.010538705*	
HAPs Total							*0.292*	

Notes:

1. Actual SO2 emissions from CEMS Data
2. Emission Factors for PM based on source compliance test results (4/20/09)
3. Maximum capacity is 298,577,600 cft/year. Assume a natural gas heating value of 1020 BTU/scf

Maximum Heat Input Capacity = 34.7658849 MMBtu/hr

Therefore, use EF 1.4 for small boilers (<100 MMBtu/hr heat input)

4. HAPs Source: Tim Fisher (TRI RY 2009 Files). Average of moly oxide and moly sulfide assays.

5. As all emissions from the Roaster report to the main stack, counting PM and PM10 generated as a result of combustion sources would result in double counting emissions (and fees).

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA CANNERY OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 059
SCC: 3-03-024-04

Operation description:

Sierrita cannery operations. This part of operations is exhausted by 1 FARR cartridge-style unit
OPERATION 214, PROCESS 436, SOURCE 059

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive		--		0.1200	105,120	0.2029	
	Point Source				**0.0039** lb/ton Moly	tons MoO/MoS/yr		Source Test Data - 3/30/12
PM-10	Non-Fugitive				0.0600	105120	0.2029	
	Point Source				**0.0039** lb/ton Moly	tons MoO/MoS/yr		Source Test Data - 3/30/12
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs	--	--	--	--	--	--	--	--
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.004000		8.11526E-06	
Arsenic Compounds					0.006500		1.31873E-05	
Cadmium Compounds					0.005100		1.0347E-05	
Chromium Compounds					0.002500		5.07204E-06	
Cobalt Compounds					0.004000		8.11526E-06	
Lead Compounds					0.032000		6.49221E-05	
Manganese Compounds					0.006000		1.21729E-05	
Mercury Compounds					0.000100		2.02882E-07	
Nickel Compounds					0.002000		4.05763E-06	
Selenium Compounds					0.004000		8.11526E-06	
Total HAPs							*0.000134308*	

Notes:
1. The estimated control efficiencies were derived from the USEPA PM10CALC program (04/29/93) which calculates PM10 control efficiencies for specified control equipment corresponding to a particular SCC code.
2. It was assumed to be applicable to PM emissions as well.
3. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Oxide
4. Wheel-a-brator replaced with FARR unit: 10/9/11

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-Misc
SCC: 1-02-006-03

Operation description:

Remaining natural gas fired equipment (heaters, etc.)

OPERATION 223, PROCESS 448, SOURCE 062-Misc

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	66,576,000 cft/yr	0.2529888	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	66,576,000 cft/yr	0.2529888	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	66,576,000 cft/yr	0.2529888	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	66,576,000 cft/yr	0.0199728	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	66,576,000 cft/yr	2.796192	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	66,576,000 cft/yr	3.3288	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	66,576,000 cft/yr	0.183084	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive Point Source					
2-Methylnapthalene			2.4E-11	66,576,000	7.98912E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	66,576,000	5.99184E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	66,576,000	5.32608E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	66,576,000	5.99184E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	66,576,000	5.99184E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	66,576,000	7.98912E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	66,576,000	5.99184E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	66,576,000	6.99048E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	66,576,000	3.99456E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	66,576,000	5.99184E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	66,576,000	3.99456E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	66,576,000	5.99184E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	66,576,000	5.99184E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	66,576,000	3.99456E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	66,576,000	3.99456E-05	AP-42, Table 1.4-3, 7/98

Fluoranthene			3E-12	66,576,000	9.9864E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	66,576,000	9.32064E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	66,576,000	0.0024966	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	66,576,000	0.0599184	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	66,576,000	5.99184E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	66,576,000	2.03057E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	66,576,000	5.65896E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	66,576,000	1.6644E-07	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	66,576,000	0.000113179	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	66,576,000	6.6576E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	66,576,000	3.99456E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	66,576,000	3.66168E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	66,576,000	4.66032E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	66,576,000	2.79619E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	66,576,000	1.26494E-05	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	66,576,000	8.65488E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	66,576,000	6.99048E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	66,576,000	7.98912E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.062846353*	

Notes:

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-062
SCC: 1-02-006-03

Operation description:

East boiler - Parker boiler Model 150, natural gas-fired, used for process steam operations.
Maximum rated heat input capacity: 8.3 MMBtu/hr.
OPERATION 217, PROCESS 442, SOURCE 062-062

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	72,708,000 cft/yr	0.2762904	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	72,708,000 cft/yr	0.2762904	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	72,708,000 cft/yr	0.2762904	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	72,708,000 cft/yr	0.0218124	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	72,708,000 cft/yr	3.053736	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	72,708,000 cft/yr	3.6354	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	72,708,000 cft/yr	0.199947	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive Point Source					
2-Methylnapthalene			2.4E-11	72,708,000	8.72496E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	72,708,000	6.54372E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	72,708,000	5.81664E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	72,708,000	6.54372E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	72,708,000	6.54372E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	72,708,000	8.72496E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	72,708,000	6.54372E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	72,708,000	7.63434E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	72,708,000	4.36248E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	72,708,000	6.54372E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	72,708,000	4.36248E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	72,708,000	6.54372E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	72,708,000	6.54372E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	72,708,000	4.36248E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	72,708,000	4.36248E-05	AP-42, Table 1.4-3, 7/98

Fluoranthene			3E-12	72,708,000	1.09062E-07	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	72,708,000	1.01791E-07	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	72,708,000	0.00272655	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	72,708,000	0.0654372	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	72,708,000	6.54372E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	72,708,000	2.21759E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	72,708,000	6.18018E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	72,708,000	1.8177E-07	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	72,708,000	0.000123604	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	72,708,000	7.2708E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	72,708,000	4.36248E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	72,708,000	3.99894E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	72,708,000	5.08956E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	72,708,000	3.05374E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	72,708,000	1.38145E-05	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	72,708,000	9.45204E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	72,708,000	7.63434E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	72,708,000	8.72496E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.068634832*	

Notes:

Max. Annual Prod (MBTU's/Hr)	8.466
Max. Allowable PM Rate (R18-2-724 (C))	5.248051851

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-064
SCC: 1-02-006-03

Operation description:

East Therminol heater - American Hydrotherm 500- Make, natural gas-fired, used for heating recirculating oil. Maximum rated heat input capacity: 6.25 MMBtu/hr.
OPERATION 210, PROCESS 454, SOURCE 062-064

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production cft/yr	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	54,750,000 cft/yr	0.20805	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	54,750,000 cft/yr	0.20805	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	54,750,000 cft/yr	0.20805	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	54,750,000 cft/yr	0.016425	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	54,750,000 cft/yr	2.2995	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	54,750,000 cft/yr	2.7375	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	54,750,000 cft/yr	0.1505625	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive					
2-Methylnapthalene	Point Source		2.4E-11	54,750,000	0.000000657	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	54,750,000	0.000000438	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	54,750,000	6.57E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	54,750,000	5.74875E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	54,750,000	3.285E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	54,750,000	3.285E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	54,750,000	3.285E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	54,750,000	0.00003285	AP-42, Table 1.4-3, 7/98
Fluoranthene			3E-12	54,750,000	8.2125E-08	AP-42, Table 1.4-3, 7/98

Fluorene			2.8E-12	54,750,000	7.665E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	54,750,000	0.002053125	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	54,750,000	0.049275	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	54,750,000	1.66988E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	54,750,000	4.65375E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	54,750,000	1.36875E-07	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	54,750,000	0.000093075	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	54,750,000	0.000005475	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	54,750,000	3.285E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	54,750,000	3.01125E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	54,750,000	0.000038325	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	54,750,000	2.2995E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	54,750,000	1.04025E-05	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	54,750,000	7.1175E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	54,750,000	5.74875E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	54,750,000	0.000000657	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					0.051682856	

Notes:

Max. Annual Prod (MBTU's/Hr)	6.375
Max. Allowable PM Rate (R18-2-724 (C))	4.219478686

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-065
SCC: 1-02-006-03

Operation description:

West Hot-oil heater - American Hydrotherm 500- Make, natural gas-fired, used for heating recirculating oil. Maximum rated heat input capacity: 6.25 MMBtu/hr.
OPERATION 209, PROCESS 453, SOURCE 062-065

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	54,750,000 cft/yr	0.20805	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	54,750,000 cft/yr	0.20805	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	54,750,000 cft/yr	0.20805	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	54,750,000 cft/yr	0.016425	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	54,750,000 cft/yr	2.2995	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	54,750,000 cft/yr	2.7375	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	54,750,000 cft/yr	0.1505625	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive					
2-Methylnapthalene	Point Source		2.4E-11	54,750,000	0.000000657	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	54,750,000	0.000000438	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	54,750,000	6.57E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	54,750,000	5.74875E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	54,750,000	3.285E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	54,750,000	3.285E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	54,750,000	3.285E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	54,750,000	0.00003285	AP-42, Table 1.4-3, 7/98
Fluoranthene			3E-12	54,750,000	8.2125E-08	AP-42, Table 1.4-3, 7/98

Fluorene			2.8E-12	54,750,000	7.665E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	54,750,000	0.002053125	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	54,750,000	0.049275	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	54,750,000	4.9275E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	54,750,000	1.66988E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	54,750,000	4.65375E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	54,750,000	1.36875E-07	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	54,750,000	0.000093075	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	54,750,000	0.000005475	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	54,750,000	3.285E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	54,750,000	3.01125E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	54,750,000	0.000038325	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	54,750,000	2.2995E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	54,750,000	1.04025E-05	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	54,750,000	7.1175E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	54,750,000	5.74875E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	54,750,000	0.000000657	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					0.051682856	

Notes:

Max. Annual Prod (MBTU's/Hr)	6.375
Max. Allowable PM Rate (R18-2-724 (C))	4.219478686

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-080
SCC: 1-02-006-03

Operation description:

Rhenium plant hot water heaters - natural gas-fired, used for process operations.
Total maximum rated heat input capacity: 1.2 MMBtu/hr.
OPERATION 212, PROCESS 434, SOURCE 062-080

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076	10,512,000	0.0399456	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	lbs/cft 0.0000076	cft/yr 10,512,000	0.0399456	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	lbs/cft 0.0000076	cft/yr 10,512,000	0.0399456	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	lbs/cft 0.0000006	cft/yr 10,512,000	0.0031536	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	lbs/cft 0.000084	cft/yr 10,512,000	0.441504	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	lbs/cft 0.0001	cft/yr 10,512,000	0.5256	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	lbs/cft 0.0000055	cft/yr 10,512,000	0.028908	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive Point Source		lbs/cft	cft/yr		
2-Methylnapthalene			2.4E-11	10,512,000	1.26144E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	10,512,000	8.4096E-08	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	10,512,000	1.26144E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	10,512,000	1.10376E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	10,512,000	6.3072E-09	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	10,512,000	6.3072E-09	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	10,512,000	6.3072E-09	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	10,512,000	6.3072E-06	AP-42, Table 1.4-3, 7/98

Fluoranthene			3E-12	10,512,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	10,512,000	1.47168E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	10,512,000	0.0003942	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	10,512,000	0.0094608	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	10,512,000	9.4608E-09	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	10,512,000	3.20616E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	10,512,000	8.9352E-08	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	10,512,000	2.628E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	10,512,000	1.78704E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	10,512,000	1.0512E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	10,512,000	6.3072E-08	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	10,512,000	5.7816E-06	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	10,512,000	7.3584E-06	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	10,512,000	4.41504E-07	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	10,512,000	1.99728E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	10,512,000	1.36656E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	10,512,000	1.10376E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	10,512,000	1.26144E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.009923108*	

Notes:

Max. Annual Prod (MBTU's/Hr)	1.224
Max. Allowable PM Rate (R18-2-724 (C))	1.186089448

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-081
SCC: 1-02-006-03

Operation description:

Change room - Parker boiler, natural gas fired, used for process steam operations.
Maximum rated heat input capacity: 2.0 MMBtu/hr
OPERATION 220, PROCESS 445, SOURCE 062-081

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	17,520,000 cft/yr	0.066576	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	17,520,000 cft/yr	0.066576	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	17,520,000 cft/yr	0.066576	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	17,520,000 cft/yr	0.005256	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	17,520,000 cft/yr	0.73584	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	17,520,000 cft/yr	0.876	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	17,520,000 cft/yr	0.04818	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive					
2-Methylnapthalene	Point Source		2.4E-11	17,520,000	2.1024E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	17,520,000	1.4016E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	17,520,000	2.1024E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	17,520,000	0.000018396	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	17,520,000	1.0512E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	17,520,000	1.0512E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	17,520,000	1.0512E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	17,520,000	0.000010512	AP-42, Table 1.4-3, 7/98
Fluoranthene			3E-12	17,520,000	2.628E-08	AP-42, Table 1.4-3, 7/98

Fluorene			2.8E-12	17,520,000	2.4528E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	17,520,000	0.000657	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	17,520,000	0.015768	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	17,520,000	1.5768E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	17,520,000	5.3436E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	17,520,000	1.4892E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	17,520,000	4.38E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	17,520,000	0.000029784	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	17,520,000	0.000001752	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	17,520,000	1.0512E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	17,520,000	0.000009636	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	17,520,000	0.000012264	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	17,520,000	7.3584E-07	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	17,520,000	3.3288E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	17,520,000	2.2776E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	17,520,000	0.000018396	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	17,520,000	2.1024E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.016538514*	

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-082
SCC: 1-02-006-03

Operation description:

SX1 - Parker boiler, natural gas fired, used for heating solutions. NOT IN USE
Maximum rated heat input capacity: 2.6 MMBtu/hr
OPERATION 215, PROCESS 439, SOURCE 062-082

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	22,776,000 cft/yr	0.0865488	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	22,776,000 cft/yr	0.0865488	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	22,776,000 cft/yr	0.0865488	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	22,776,000 cft/yr	0.0068328	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	22,776,000 cft/yr	0.956592	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	22,776,000 cft/yr	1.1388	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	22,776,000 cft/yr	0.062634	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive					
2-Methylnapthalene	Point Source		2.4E-11	22,776,000	2.73312E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	22,776,000	2.04984E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	22,776,000	1.82208E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	22,776,000	2.04984E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	22,776,000	2.04984E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	22,776,000	2.73312E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	22,776,000	2.04984E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	22,776,000	2.39148E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	22,776,000	1.36656E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	22,776,000	2.04984E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	22,776,000	1.36656E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	22,776,000	2.04984E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	22,776,000	2.04984E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	22,776,000	1.36656E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	22,776,000	1.36656E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3E-12	22,776,000	3.4164E-08	AP-42, Table 1.4-3, 7/98

Fluorene			2.8E-12	22,776,000	3.18864E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	22,776,000	0.0008541	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	22,776,000	0.0204984	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	22,776,000	2.04984E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	22,776,000	6.94668E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	22,776,000	1.93596E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	22,776,000	5.694E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	22,776,000	3.87192E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	22,776,000	2.2776E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	22,776,000	1.36656E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	22,776,000	1.25268E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	22,776,000	1.59432E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	22,776,000	9.56592E-07	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	22,776,000	4.32744E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	22,776,000	2.96088E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	22,776,000	2.39148E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	22,776,000	2.73312E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.021500068*	

Notes:

Max. Annual Prod (MBTU's/Hr)	2.652
Max. Allowable PM Rate (R18-2-724 (C))	2.149520388

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-083
SCC: 1-02-006-03

Operation description:

Zinc pot heaters, natural gas-fired, used for relining crusher components using zinc.
Maximum rated heat input capacity: 0.6 MMBtu/hr -- NOT CURRENTLY IN USE
OPERATION 221, PROCESS 446, SOURCE 062-083

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	5,256,000 cft/yr	0.0199728	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	5,256,000 cft/yr	0.0199728	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	5,256,000 cft/yr	0.0199728	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	5,256,000 cft/yr	0.0015768	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	5,256,000 cft/yr	0.220752	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	5,256,000 cft/yr	0.2628	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	5,256,000 cft/yr	0.014454	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive					
2-Methylnapthalene	Point Source		2.4E-11	5,256,000	6.3072E-08	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	5,256,000	4.2048E-08	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	5,256,000	6.3072E-09	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	5,256,000	5.5188E-06	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	5,256,000	3.1536E-09	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	5,256,000	3.1536E-09	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	5,256,000	3.1536E-09	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	5,256,000	3.1536E-06	AP-42, Table 1.4-3, 7/98
Fluoranthene			3E-12	5,256,000	7.884E-09	AP-42, Table 1.4-3, 7/98

Fluorene			2.8E-12	5,256,000	7.3584E-09	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	5,256,000	0.0001971	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	5,256,000	0.0047304	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	5,256,000	4.7304E-09	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	5,256,000	1.60308E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	5,256,000	4.4676E-08	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	5,256,000	1.314E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	5,256,000	8.9352E-06	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	5,256,000	5.256E-07	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	5,256,000	3.1536E-08	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	5,256,000	2.8908E-06	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	5,256,000	3.6792E-06	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	5,256,000	2.20752E-07	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	5,256,000	9.9864E-07	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	5,256,000	6.8328E-07	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	5,256,000	5.5188E-06	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	5,256,000	6.3072E-08	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.004961554*	

Notes:

Max. Annual Prod (MBTU's/Hr)	0.612
Max. Allowable PM Rate (R18-2-724 (C))	0.69602586

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-084
SCC: 1-02-006-02

Operation description:

West boiler - Parker Model 150, natural gas-fired, used for process steam operations.
Maximum rated heat input capacity: 6.3 MMBtu/hr.
OPERATION 222, PROCESS 447, SOURCE 062-084

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	53,580,583 cft/yr	0.203606214	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	53,580,583 cft/yr	0.203606214	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	53,580,583 cft/yr	0.203606214	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	53,580,583 cft/yr	0.016074175	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	53,580,583 cft/yr	2.250384466	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	53,580,583 cft/yr	2.679029126	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	53,580,583 cft/yr	0.147346602	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive					
2-Methylnapthalene	Point Source		2.4E-11	53,580,583	6.42967E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	53,580,583	4.82225E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	53,580,583	4.28645E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	53,580,583	4.82225E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	53,580,583	4.82225E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	53,580,583	6.42967E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	53,580,583	4.82225E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	53,580,583	5.62596E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	53,580,583	3.21483E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	53,580,583	4.82225E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	53,580,583	3.21483E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	53,580,583	4.82225E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	53,580,583	4.82225E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	53,580,583	3.21483E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	53,580,583	3.21483E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3E-12	53,580,583	8.03709E-08	AP-42, Table 1.4-3, 7/98

Fluorene			2.8E-12	53,580,583	7.50128E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	53,580,583	0.002009272	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	53,580,583	0.048222524	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	53,580,583	4.82225E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	53,580,583	1.63421E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	53,580,583	4.55435E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	53,580,583	1.33951E-07	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	53,580,583	9.1087E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	53,580,583	5.35806E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	53,580,583	3.21483E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	53,580,583	2.94693E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	53,580,583	3.75064E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	53,580,583	2.25038E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	53,580,583	1.01803E-05	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	53,580,583	6.96548E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	53,580,583	5.62596E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	53,580,583	6.42967E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.05057895*	

Notes:

Max. Annual Prod (MBTU's/Hr)	6.238834951
Max. Allowable PM Rate (R18-2-724 (C))	4.150000231

Boiler replaced August 08.

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2015

SOURCE NO. : 062-091
SCC: 1-02-006-02

Operation description:

Process Hot Water Boiler for Twin Buttes Electrowinning Plant - Natural Gas Fired
Cyclotherm Div., Oswego Package Boiler Co., Inc.; Model C-10500; S/N NB 5835; maximum rated capacity - 8.4 MMBtu/hr.
OPERATION 216, PROCESS 455, SOURCE 062-091

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Input Nat'l Gas	Potential Emissions [1] tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	73,584,000 cft/yr	0.2796192	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	-- --	0.0000076 lbs/cft	73,584,000 cft/yr	0.2796192	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	73,584,000 cft/yr	0.2796192	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	73,584,000 cft/yr	0.0220752	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	73,584,000 cft/yr	3.090528	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	73,584,000 cft/yr	3.6792	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	73,584,000 cft/yr	0.202356	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive					
2-Methylnapthalene	Point Source		2.4E-11	73,584,000	8.83008E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	73,584,000	6.62256E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	73,584,000	5.88672E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	73,584,000	6.62256E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	73,584,000	6.62256E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	73,584,000	8.83008E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	73,584,000	6.62256E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	73,584,000	7.72632E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	73,584,000	4.41504E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	73,584,000	6.62256E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	73,584,000	4.41504E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	73,584,000	6.62256E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	73,584,000	6.62256E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	73,584,000	4.41504E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	73,584,000	4.41504E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3E-12	73,584,000	1.10376E-07	AP-42, Table 1.4-3, 7/98
Fluorene			2.8E-12	73,584,000	1.03018E-07	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	73,584,000	0.0027594	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	73,584,000	0.0662256	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	73,584,000	6.62256E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	73,584,000	2.24431E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	73,584,000	6.25464E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	73,584,000	1.8396E-07	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	73,584,000	0.000125093	AP-42, Table 1.4-3, 7/98

Arsenic			2E-10	73,584,000	7.3584E-06	AP-42, Table 1.4-3, 7/98	
Beryllium			1.2E-11	73,584,000	4.41504E-07	AP-42, Table 1.4-3, 7/98	
Cadmium			1.1E-09	73,584,000	4.04712E-05	AP-42, Table 1.4-3, 7/98	
Chromium			1.4E-09	73,584,000	5.15088E-05	AP-42, Table 1.4-3, 7/98	
Cobalt			8.4E-11	73,584,000	3.09053E-06	AP-42, Table 1.4-3, 7/98	
Manganese			3.8E-10	73,584,000	1.3981E-05	AP-42, Table 1.4-3, 7/98	
Mercury			2.6E-10	73,584,000	9.56592E-06	AP-42, Table 1.4-3, 7/98	
Nickel			2.1E-09	73,584,000	7.72632E-05	AP-42, Table 1.4-3, 7/98	
Selenium			2.4E-11	73,584,000	8.83008E-07	AP-42, Table 1.4-3, 7/98	
			lbs/cft	cft/yr			
HAPs Total					*0.069461758*		

Notes:

Max. Annual Prod (MBTU's/Hr)	8.568
Max. Allowable PM Rate (R18-2-724 (C))	5.296608037

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 062-098
SCC: 1-02-006-03

Operation description:

Autoclave Process boiler - natural gas-fired, used for rhenium process operations.
Total maximum rated heat input capacity: 2.80 MMBtu/hr.
OPERATION 212, PROCESS 434, SOURCE 062-098

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	24,528,000 cft/yr	0.0932064	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	24,528,000 cft/yr	0.0932064	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	24,528,000 cft/yr	0.0932064	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	24,528,000 cft/yr	0.0073584	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	24,528,000 cft/yr	1.030176	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	24,528,000 cft/yr	1.2264	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	24,528,000 cft/yr	0.067452	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive					
2-Methylnapthalene	Point Source		2.4E-11	24,528,000	2.94336E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	24,528,000	2.20752E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	24,528,000	1.96224E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	24,528,000	2.20752E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	24,528,000	2.20752E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	24,528,000	2.94336E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	24,528,000	2.20752E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	24,528,000	2.57544E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	24,528,000	1.47168E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	24,528,000	2.20752E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	24,528,000	1.47168E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	24,528,000	2.20752E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	24,528,000	2.20752E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	24,528,000	1.47168E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	24,528,000	1.47168E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3E-12	24,528,000	3.6792E-08	AP-42, Table 1.4-3, 7/98

Fluorene			2.8E-12	24,528,000	3.43392E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	24,528,000	0.0009198	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	24,528,000	0.0220752	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	24,528,000	2.20752E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	24,528,000	7.48104E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	24,528,000	2.08488E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	24,528,000	6.132E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	24,528,000	4.16976E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	24,528,000	2.4528E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	24,528,000	1.47168E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	24,528,000	1.34904E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	24,528,000	1.71696E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	24,528,000	1.03018E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	24,528,000	4.66032E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	24,528,000	3.18864E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	24,528,000	2.57544E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	24,528,000	2.94336E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.023153919*	

Notes:

Max. Annual Prod (MBTU's/Hr)	2.856
Max. Allowable PM Rate (R18-2-724 (C))	2.275577287

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2015

STACK : S 062-099
SCC: 1-02-006-03

Operation description:

Twin Buttes EW Boiler - natural gas-fired, used for process operations.
Maximum rated heat input capacity: 4.4 MMBtu/hr
OPERATION 216, PROCESS 441, SOURCE 062-099

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	38,544,000 cft/yr	0.1464672	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	38,544,000 cft/yr	0.1464672	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	38,544,000 cft/yr	0.1464672	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	38,544,000 cft/yr	0.0115632	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	38,544,000 cft/yr	1.618848	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	38,544,000 cft/yr	1.9272	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	38,544,000 cft/yr	0.105996	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive					
2-Methylnapthalene	Point Source		2.4E-11	38,544,000	4.62528E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	38,544,000	3.46896E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	38,544,000	3.08352E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	38,544,000	3.46896E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	38,544,000	3.46896E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	38,544,000	4.62528E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	38,544,000	3.46896E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	38,544,000	4.04712E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	38,544,000	2.31264E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	38,544,000	3.46896E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	38,544,000	2.31264E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	38,544,000	3.46896E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	38,544,000	3.46896E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	38,544,000	2.31264E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	38,544,000	2.31264E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3E-12	38,544,000	5.7816E-08	AP-42, Table 1.4-3, 7/98

Fluorene			2.8E-12	38,544,000	5.39616E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	38,544,000	0.0014454	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	38,544,000	0.0346896	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	38,544,000	3.46896E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	38,544,000	1.17559E-05	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	38,544,000	3.27624E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	38,544,000	9.636E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	38,544,000	6.55248E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	38,544,000	3.8544E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	38,544,000	2.31264E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	38,544,000	2.11992E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	38,544,000	2.69808E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	38,544,000	1.61885E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	38,544,000	7.32336E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	38,544,000	5.01072E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	38,544,000	4.04712E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	38,544,000	4.62528E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.03638473*	

Notes:

Max. Annual Prod (MBTU's/Hr)	4.488
Max. Allowable PM Rate (R18-2-724 (C))	3.22138159

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2015

STACK : S 062-099
SCC: 1-02-006-03

Operation description:

Twin Buttes EW Boiler - natural gas-fired, used for process operations.
Maximum rated heat input capacity: 3.31 MMBtu/hr
OPERATION 216, PROCESS 441, SOURCE 062-100

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	28,995,600 cft/yr	0.11018328	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	28,995,600 cft/yr	0.11018328	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	28,995,600 cft/yr	0.11018328	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	28,995,600 cft/yr	0.00869868	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	28,995,600 cft/yr	1.2178152	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	28,995,600 cft/yr	1.44978	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	28,995,600 cft/yr	0.0797379	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive					
2-Methylnapthalene	Point Source		2.4E-11	28,995,600	3.47947E-07	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	28,995,600	2.6096E-08	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	28,995,600	2.31965E-07	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	28,995,600	2.6096E-08	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	28,995,600	2.6096E-08	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	28,995,600	3.47947E-08	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	28,995,600	2.6096E-08	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	28,995,600	3.04454E-05	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	28,995,600	1.73974E-08	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	28,995,600	2.6096E-08	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	28,995,600	1.73974E-08	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	28,995,600	2.6096E-08	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	28,995,600	2.6096E-08	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	28,995,600	1.73974E-08	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	28,995,600	1.73974E-05	AP-42, Table 1.4-3, 7/98
Fluoranthene			3E-12	28,995,600	4.34934E-08	AP-42, Table 1.4-3, 7/98

Fluorene			2.8E-12	28,995,600	4.05938E-08	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	28,995,600	0.001087335	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	28,995,600	0.02609604	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	28,995,600	2.6096E-08	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	28,995,600	8.84366E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	28,995,600	2.46463E-07	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	28,995,600	7.2489E-08	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	28,995,600	4.92925E-05	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	28,995,600	2.89956E-06	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	28,995,600	1.73974E-07	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	28,995,600	1.59476E-05	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	28,995,600	2.02969E-05	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	28,995,600	1.21782E-06	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	28,995,600	5.50916E-06	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	28,995,600	3.76943E-06	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	28,995,600	3.04454E-05	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	28,995,600	3.47947E-07	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.02737124*	

Notes:

Max. Annual Prod (MBTU's/Hr)	3.3762
Max. Allowable PM Rate (R18-2-724 (C))	2.588062687

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY FUEL COMBUSTION
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2015

STACK : S 062-099
SCC: 1-02-006-03

Operation description:

Twin Buttes Landa Boiler/ Hot Water Pressure Washer - Natural gas-fired, used for rinsing.
Maximum rated heat input capacity: 0.4 MMBtu/hr
OPERATION 216, PROCESS 441, SOURCE 062-101

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max. Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	0.0000076 lbs/cft	3,504,000 cft/yr	0.0133152	AP-42 Table 1.4-2, 7/98
PM-10	Non-Fugitive Point Source	--	0.0000076 lbs/cft	3,504,000 cft/yr	0.0133152	AP-42 Table 1.4-2, 7/98
PM-2.5	Non-Fugitive Point Source	--	0.0000076 lbs/cft	3,504,000 cft/yr	0.0133152	AP-42 Table 1.4-2, 7/98
Sulfur Dioxide	Non-Fugitive Point Source	--	0.0000006 lbs/cft	3,504,000 cft/yr	0.0010512	AP-42 Table 1.4-2, 7/98
Carbon Monoxide	Non-Fugitive Point Source	--	0.000084 lbs/cft	3,504,000 cft/yr	0.147168	AP-42 Table 1.4-1, 7/98
Nitrogen Oxides (NOx)	Non-Fugitive Point Source	--	0.0001 lbs/cft	3,504,000 cft/yr	0.1752	AP-42 Table 1.4-1, 7/98
Non-Methane VOC	Non-Fugitive Point Source	--	0.0000055 lbs/cft	3,504,000 cft/yr	0.009636	AP-42 Table 1.4-2, 7/98
HAPs	Non-Fugitive					
2-Methylnapthalene	Point Source		2.4E-11	3,504,000	4.2048E-08	AP-42, Table 1.4-3, 7/98
3-Methylchloranthrene			1.8E-12	3,504,000	3.1536E-09	AP-42, Table 1.4-3, 7/98
7,12-Dimethylbenz(a)antrhacene			1.6E-11	3,504,000	2.8032E-08	AP-42, Table 1.4-3, 7/98
Acenapthene			1.8E-12	3,504,000	3.1536E-09	AP-42, Table 1.4-3, 7/98
Acenapthylene			1.8E-12	3,504,000	3.1536E-09	AP-42, Table 1.4-3, 7/98
Anthracene			2.4E-12	3,504,000	4.2048E-09	AP-42, Table 1.4-3, 7/98
Benz(a)anthracene			1.8E-12	3,504,000	3.1536E-09	AP-42, Table 1.4-3, 7/98
Benzene			2.1E-09	3,504,000	3.6792E-06	AP-42, Table 1.4-3, 7/98
Benzo(a)pyrene			1.2E-12	3,504,000	2.1024E-09	AP-42, Table 1.4-3, 7/98
Benzo(b)fluoranthene			1.8E-12	3,504,000	3.1536E-09	AP-42, Table 1.4-3, 7/98
Benzo(g,h,i)perylene			1.2E-12	3,504,000	2.1024E-09	AP-42, Table 1.4-3, 7/98
Benzo(k)fluoranthene			1.8E-12	3,504,000	3.1536E-09	AP-42, Table 1.4-3, 7/98
Chrysene			1.8E-12	3,504,000	3.1536E-09	AP-42, Table 1.4-3, 7/98
Dibenzo(a,h)anthracene			1.2E-12	3,504,000	2.1024E-09	AP-42, Table 1.4-3, 7/98
Dichlorobenzene			1.2E-09	3,504,000	2.1024E-06	AP-42, Table 1.4-3, 7/98
Fluoranthene			3E-12	3,504,000	5.256E-09	AP-42, Table 1.4-3, 7/98

Fluorene			2.8E-12	3,504,000	4.9056E-09	AP-42, Table 1.4-3, 7/98
Formaldehyde			0.000000075	3,504,000	0.0001314	AP-42, Table 1.4-3, 7/98
Hexane			0.0000018	3,504,000	0.0031536	AP-42, Table 1.4-3, 7/98
Ideno(1,2,3-cd)pyrene			1.8E-12	3,504,000	3.1536E-09	AP-42, Table 1.4-3, 7/98
Napthalene			6.1E-10	3,504,000	1.06872E-06	AP-42, Table 1.4-3, 7/98
Phenanthrene			1.7E-11	3,504,000	2.9784E-08	AP-42, Table 1.4-3, 7/98
Pyrene			5E-12	3,504,000	8.76E-09	AP-42, Table 1.4-3, 7/98
Toluene			3.4E-09	3,504,000	5.9568E-06	AP-42, Table 1.4-3, 7/98
Arsenic			2E-10	3,504,000	3.504E-07	AP-42, Table 1.4-3, 7/98
Beryllium			1.2E-11	3,504,000	2.1024E-08	AP-42, Table 1.4-3, 7/98
Cadmium			1.1E-09	3,504,000	1.9272E-06	AP-42, Table 1.4-3, 7/98
Chromium			1.4E-09	3,504,000	2.4528E-06	AP-42, Table 1.4-3, 7/98
Cobalt			8.4E-11	3,504,000	1.47168E-07	AP-42, Table 1.4-3, 7/98
Manganese			3.8E-10	3,504,000	6.6576E-07	AP-42, Table 1.4-3, 7/98
Mercury			2.6E-10	3,504,000	4.5552E-07	AP-42, Table 1.4-3, 7/98
Nickel			2.1E-09	3,504,000	3.6792E-06	AP-42, Table 1.4-3, 7/98
Selenium			2.4E-11	3,504,000	4.2048E-08	AP-42, Table 1.4-3, 7/98
			lbs/cft	cft/yr		
HAPs Total					*0.003307703*	

Notes:

Max. Annual Prod (MBTU's/Hr)	0.408
Max. Allowable PM Rate (R18-2-724 (C))	0.509578619

ESTIMATED AIR POLLUTANT EMISSIONS FROM LIME HANDLING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 063	**Operation description:** Sierrita lime handling operations. Particulate emissions controlled by one Ducon Dynamic wet dust collector at a time. - Wet Scrubber #1
	OPERATION 218, PROCESS 443, SOURCE 063
SCC: 3-03-011-99	

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collector UW-3 Model II	--	0.96	**0.0303** lb/ton lime	87,600 tons lime/yr	1.3289	Source Test: 11/18/09
PM-10	Non-Fugitive Point Source	Size 48 SI 502674001		0.96	**0.0303** lb/ton lime	87,600 tons lime/yr	1.3289	PM = PM10
PM-2.5	Non-Fugitive Point Source			n/c	**--** **0.00455** lb/ton rock	87,600 tons rock/yr	0.1993	AP-42 App B, B.2.2

Notes:

1. Maximum product throughput is based on the maximum capacity of slaked lime handling system of 10 tons/hr.
2. The moisture content of the Lime delivered is 0% per Chemical Lime.

ESTIMATED AIR POLLUTANT EMISSIONS FROM LIME HANDLING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 063	**Operation description:** Sierrita lime handling operations. Particulate emissions controlled by one Ducon Dynamic wet dust collector at a time. - Wet Scrubber #2
	OPERATION 218, PROCESS 443, SOURCE 063
SCC: 3-03-011-99	

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collector UW-3 Model II	--	0.96	**0.0061** lb/ton lime	87,600 tons lime/yr	0.2663	Source Test: 11/18/09
PM-10	Non-Fugitive Point Source	Size 48 SI 502674001		0.96	**0.0061** lb/ton lime	87,600 tons lime/yr	0.2663	PM = PM10
PM-2.5	Non-Fugitive Point Source			n/c	**--** **0.00091** lb/ton rock	87,600 tons rock/yr	0.0399	AP-42 App B, B.2.2

Notes:

1. Maximum product throughput is based on the maximum capacity of slaked lime handling system of 10 tons/hr.
2. The moisture content of the Lime delivered is 0% per Chemical Lime.

REVISED 2015 ESTIMATED AIR POLLUTANT EMISSIONS FROM MINING ACTIVITIES
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2015

STACK : S 066
SCC: 3-05-020-09

Operation description:
Rock blasting with ANFO for production. Production refers to the total of ore + leach + waste.
Includes blasting operations at and above 3850 elevation.
OPERATION 201, PROCESS 401, SOURCE 066

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Cntr. Emission Factor (1)	U/C Emission Cntr. Emission Factor (4)	Max. Annual Production (2)	Actual Annual Blasts (3)	Emissions Potential tons/yr	Emissions Potential tons/yr	Remarks		
Particulate Matter (PM)	Fugitive Non-Point		55.33985905 **55.33985905** lb/blast		1,095 blasts/yr	40.91420638 blasts/yr	30.30		AP-42, Table 11.9-1, 7/98 Blasting Operation.		
PM-10	Fugitive Non-Point		28.77672671 **28.77672671** lb/blast		1,095 blasts/yr	40.91420638 blasts/yr	15.76		AP-42, Table 11.9-1, 7/98 Blasting Operation.		
PM-2.5	Fugitive Non-Point		1.660195772 **1.660195772**		1095 blasts/yr	40.91420638 blasts/yr	0.91		AP-42 Table 11.9-1, 7/98 Blasting Operation.		
Sulfur Dioxide	Fugitive Non-Point	--	2 lb/ton ANFO		22180 ton ANFO/yr	7945.31 ton ANFO/yr	22.18		AP-42 Table 13.3-1, 1/95		
Carbon Monoxide	Fugitive Non-Point	--	67 lb/ton ANFO	46.18	22180 ton ANFO/yr	7945.31 ton ANFO/yr	743.03	512.14	Proposed updates per interpretation	743.03	230.89
Nitrogen Oxides (NOx)	Fugitive Non-Point	--	17 lb/ton ANFO	11.5	22180 ton ANFO/yr	7945.31 ton ANFO/yr	188.53	127.54	Proposed updates per interpretation	188.53	61.00

Notes:
(1) Uncontrolled PM emission factor was calculated based on the AP-42, Table 11.9-1., blasting operation at western surface coal mines.
TSP = 0.000014(A)^1.5 lb/blast
A 25000 sq. ft. 3/4/04 Email from M. DeLaat
(2) Assume maximum 3 blasts per day.
(3) Actual Annual Blasts = # blasts above 3850 elevation. Pit Lip is 4050 elevation. Emissions below 50 ft. below pit lip do not escape the pit. Use 3850 elevation as conservative estimate.

ESTIMATED AIR POLLUTANT EMISSIONS FROM OVERLAND ORE TRANSPORT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 069
SCC: 3-03-024-04

Operation description:

6A/6B Overland Ore Conveyor Transfer from B2 to B3
Emissions from material handling and transfer, applicable to the belt transfer point. Maximum capacity: 5,000 tph.
OPERATION 204, PROCESS 410, SOURCE 069

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	Water sprays & Enclosed		0.0001 lb/ton rock/point	43,800,000 tons rock/yr	3.0660	AP-42, Section 11.19.2
PM-10	Non-Fugitive Point Source		Transfer Points		0.0000 lb/ton rock/point	43,800,000 tons rock/yr	1.0074	AP-42, Section 11.19.2
PM-2.5	Non-Fugitive Point Source				0.0000 lb/ton rock/point	43,800,000 lb/ton rock/point	0.2847 tons rock/yr	AP-42, Section 11.19.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		3.77354E-05	
Arsenic Compounds					0.001200		0.000036792	
Beryllium Compounds					0.000100		0.000003066	
Cadmium Compounds					0.000050		0.000001533	
Chromium Compounds					0.014577		0.000446928	
Cobalt Compounds					0.000623		1.91035E-05	
Lead Compounds					0.003000		0.00009198	
Manganese Compounds					0.023238		0.000712491	
Mercury Compounds					0.000002		5.6502E-08	
Nickel Compounds					0.001077		3.30185E-05	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.001382705*	

Notes:
1. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
2. Emission Factor based on AP-42 Section 11.19.2

ESTIMATED AIR POLLUTANT EMISSIONS FROM OVERLAND ORE TRANSPORT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 072
SCC: 3-05-020-07

Operation description:
Sierrita Conveyor A3 stacker transfer to coarse ore stockpile north of Sierrita fine crushing.
OPERATION 204, PROCESS 472, SOURCE 072

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	**Fugitive - Non-Point**	--	Wet ore	--	0.0020			AP-42, Section 13.2.4 11/06
	A3 to Stockpile		prior to			43,800,000	43.8428	(formerly Sec. 11.2.3)
	Magnetic Steel							
	Recovery Plant		stockpile		lb/ton rock/point	11,388,000	11.3991	
	Total		discharge			tons rock/yr	**55.2420**	
PM-10	**Fugitive - Non-Point**			--	0.0009			AP-42, Section 13.2.4 11/06
	A3 to Stockpile					43,800,000	20.7365	
	Magnetic Steel							
	Recovery Plant				lb/ton rock/point	11,388,000	5.3915	(formerly Sec. 11.2.3)
	Total					tons rock/yr	**26.1280**	
PM-2.5	**Fugitive - Non-Point**			--	0.0001			AP-42, Section 13.2.4 11/06
	A3 to Stockpile					43,800,000	3.1401	
	Magnetic Steel							
	Recovery Plant				lb/ton rock/point	11,388,000	0.8164	(formerly Sec. 11.2.3)
	Total					tons rock/yr	**3.9565**	
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								--
Antimony Compounds					0.001231		0.000679901	
Arsenic Compounds					0.001200		0.000662904	
Beryllium Compounds					0.000100		5.5242E-05	
Cadmium Compounds					0.000050		2.7621E-05	
Chromium Compounds					0.014577		0.00805258	
Cobalt Compounds					0.000623		0.0003442	
Lead Compounds					0.003000		0.001657259	
Manganese Compounds					0.023238		0.012837384	
Mercury Compounds					0.000002		1.01803E-06	
Nickel Compounds					0.001077		0.000594914	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.024913023*	

Notes:

1. Crushed coarse ore stockpile maximum throughput is based on the overall limit of the Primary Crusher as per Title V Permit 42862, Attachment B, Section V.B.1.a

2. AP-42, Section 13.2.4, Aggregate Handling & Storage Piles

Formula for Emisssion Factor

E = (k)(0.0032) [(U/5)^1.3 / [(M/2)^1.4]

E = emission factor (lb/ton)

k = particulate size multiplier (dimensionless) =

0.74	for PM	pg. 13.2.4-4
0.35	for PM10	pg. 13.2.4-4
0.053	for PM2.5	pg. 13.2.4-4

U = mean wind speed (mph)	6.8	Update wind speed with annual mean daily windspeed.
M = material moisture content (%)	3	C&C L. Thompsen Email 3/2/04 + 1% moisture added for water sprays.

3. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)

4. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).

ESTIMATED AIR POLLUTANT EMISSIONS FROM CONCENTRATE HANDLING ACTIVITIES
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 073
SCC: 3-05-020-07

Operation description:
Concentrate storage areas
OPERATION 209, PROCESS 450, SOURCE 073

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point	--	--	--	0.0004 lb/ton conc	562,000 tons conc/yr	0.1043	AP-42 Sec 13.2.4, 11/06
PM-10	Fugitive Non-Point			--	0.0002 lb/ton conc	562,000 tons conc/yr	0.0493	AP-42 Sec 13.2.4, 11/06
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.028000		0.002919367	
Arsenic Compounds					0.252500		0.02632643	
Beryllium Compounds					0.001000		0.000104263	
Cadmium Compounds					0.010583		0.001103451	
Chromium Compounds					0.003083		0.000321478	
Cobalt Compounds					0.010333		0.001077385	
Lead Compounds					0.255333		0.026621842	
Manganese Compounds					0.004667		0.000486561	
Mercury Compounds					0.000200		2.08526E-05	
Nickel Compounds					0.004083		0.000425741	
Selenium Compounds					0.019500		0.00203313	
Total HAPs							*0.061440501*	

Notes:
1. Concentrate throughput
2. AP-42, Section 13.2.4, Aggregate Handling & Storage Piles
Formula for Emisssion Factor
E = (k)(0.0032) [(U/5)^1.3 / [(M/2)^1.4]
E = emission factor (lb/ton)
k = particulate size multiplier (dimensionless) =
0.74 for PM pg. 13.2.4-4
0.35 for PM10 pg. 13.2.4-4
U = mean wind speed (mph) 6.8 Title V Permit Application June 1997 Appendix A (pg. A-4)
M = material moisture content (%) 10 Title V Permit Application June 1997 Appendix A (pg. A-4)
3. Sierrita Monthly Composite Assay Report for 2009 from Miami (see Assay.xls) (TRI RY 2009 Files)

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE ORE OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 075
SCC: 3-03-024-04

Operation description:
Sierrita fine ore crushing, including the four secondary scalping screens.
This part of operations are exhausted by the #10 Ducon wet dust collector (25,000 dcfm).
OPERATION 207, PROCESS 418, SOURCE 75

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Thruput (2)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collectors	Water sprays on	n/c	0.00015 lb/ton rock	42,591,120 tons rock/yr	3.1943	Source Test - 11/4/10
PM-10	Non-Fugitive Point Source		material transfer	n/c	0.00015 lb/ton rock	42,591,120 tons rock/yr	3.1943	
PM-2.5	Non-Fugitive Point Source			0.9935	-- 0.00002 lb/ton	42,591,120 tons/yr	0.4792	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		3.93149E-05	
Arsenic Compounds					0.001200		3.8332E-05	
Beryllium Compounds					0.000100		3.19433E-06	
Cadmium Compounds					0.000050		1.59717E-06	
Chromium Compounds					0.014577		0.000465636	
Cobalt Compounds					0.000623		1.99032E-05	
Lead Compounds					0.003000		9.583E-05	
Manganese Compounds					0.023238		0.000742314	
Mercury Compounds					0.000002		5.8867E-08	
Nickel Compounds					0.001077		3.44005E-05	
Selenium Compounds					0		0	
Total HAPs					*(%)*		*0.001440581*	

Notes:
n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.
1. Controlled PM emission factor based on source test data 11/4/10.
Controlled PM-10 emission factor estimated at 50% of PM.
2. Maximum production rate is Fine Crushing Plant Capacity (4S Crushers)
3. HAPs - Pb from memorandum from Charles Burnett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
4. #3S FARR installed 9/30/10 (ID 203).

ESTIMATED AIR POLLUTANT EMISSIONS FROM SOLVENT EXTRACTION OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 076

Fugitive
Non-Point

Operation description:

Evaporative Losses from SX#1, SX#2, and SX#3 Operations - Extractors, Strippers, and Washers.
OPERATION 215, PROCESS 438, SOURCE 076

Description	Solvent Name (1)	Vapor Mol Wt	Storage Temp (F)	Vapor Pres. (psia)	Mix Tank Dimensions & Working Volume (ft & gal) Diameter	Height	Tank Cap.	Liq Height	Working Vol.	Turnover (gal/yr) (4), (5)	Mix Tanks Vapor Loss Per Unit (tons/yr)	Unit(s)	Mix Vapor Loss (tons/year)
SX Plant #1													
Extractor	Orfom SX-12	241	70.53	0.0128	10	5.66	3325	4	2350.223479	4700.446958	0.001605	15	0.024075
Stripper	Orfom SX-12	241	70.53	0.0128	10	5.66	3325	4	2350.223479	4700.446958	0.001605	5	0.008025
Washer	Orfom SX-12	241	70.53	0.0128	10	5.66	3325	4	2350.223479	4700.446958	0.001605	5	0.008025
Subtotal													***0.040125***
SX Plant #2													
Extractor	Orfom SX-12	241	70.53	0.0128	16.93	13	21881.925	9.75	16418.8	32837.6	0.00946	2	0.01892
Stripper	Orfom SX-12	241	70.53	0.0128	16.93	13	21881.925	9.75	16418.8	32837.6	0.00946	1	0.00946
Washer	Orfom SX-12	241	70.53	0.0128	10.5	13.5	8745	10	6477.8	12955.6	0.00387	2	0.00774
Subtotal													***0.03612***
SX Plant #3 (6)													
Extractor	Orfom SX-12	241	70.53	0.0128	16.93	13	21881.9	9.75	16418.8	32837.6	0.010095	3	0.030285
Stripper	Orfom SX-12	241	70.53	0.0128	16.93	13	21881.9	9.75	16981	33962	0.010095	1	0.010095
Washer	Orfom SX-12	241	70.53	0.0128	16.93	13	21881.9	9.75	16981	33962	0.010095	1	0.010095
Subtotal													***0.050475***

Notes:
(1) Emissions are calculated using the US EPA TANKS 4.0 Program, provided by U.S. EPA
(2) Average annual liquid vapor pressure as calcualted by TANKS 4 uses n-decane as surrogate for Orform SX-12 having similar molecular weight and vapor pressure.
(3) None of the tanks are heated. Dominant liquid height has been assumed to be between 75% and 100% of the shell height.
(4) For this continuous process the tank level is set by an overflow wier and is constant.
(5) Assumed 2 tank turnovers per year to represent tank working losses due to maintenance activity, temporary shutdowns, etc.
(6) SX Plant #3 not in use
(7) Since flow is constant, there is no difference between maximum potential and actual emissions. The difference shown is because SX Plant #3 is not operating.

2012

Stack: S 076

Fugitive
Non-Point

Description	Settler Dimensions & Working Volume (ft & gal)					Turnover	Settler Tanks Vapor Loss Per Unit	Unit(s)	Settler Vapor Loss	Total Vapor Loss
	Diameter	Height	Tank Cap.	Liq Height	Working Vol.	(gal/yr) (4),	(tons/yr)		(tons/year)	(tons/year)
SX Plant #1										
Extractor	25.93	2	7901.039	1.5	5925.77915	11851.55831	0.00343	15	0.05145	
Stripper	25.93	2	7901.039	1.5	5925.77915	11851.55831	0.00343	5	0.01715	
Washer	25.93	2	7901.039	1.5	5925.77915	11851.55831	0.00343	5	0.01715	
Subtotal									***0.08575***	***0.125875***
SX Plant #2										
Extractor	80.11	2.8	105571.9	2.1	79179	158358	0.04581	2	0.09162	
Stripper	92.11	2.8	139505.7	2.1	104629	209258	0.0606	1	0.0606	
Washer	42.76	5.25	56379.62	3.94	42324.78	84649.56	0.0244	2	0.0488	
Subtotal									***0.20102***	***0.23714***
SX Plant #3 (6)										
Extractor	80.11	2.8	105571.8	2.1	79179	158358	0.04889	3	0.14667	
Stripper	80.11	2.8	105571.8	2.1	79179	158358	0.04889	1	0.04889	
Washer	80.11	2.8	105571.8	2.1	79179	158358	0.04889	1	0.04889	
Subtotal									***0.24445***	***0.294925***

Actual Emissions	**0.363015**
Potential Maximum Emissions	**0.65794**

ESTIMATED AIR POLLUTANT EMISSIONS FROM HEAVY EQUIPMENT TRAVELING ON UNPAVED ROADS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK: S 077

Fugitive - Non-Point

Operation Description:

Heavy Equipment traveling on the unpaved roads, including haul trucks.
Includes operations in the Sierrita, Twin Buttes, Ocotillo and Esperanza pits.
OPERATION 203, PROCESS, 406, SOURCE 077

Vehicle Type	No. Vehicles Available	No. Vehicles Used	Vehicle Wt (tons)	Mean Vehicle Wt. (tons)	Potential Annual Travel (VMT)	Total Annual VMT	AP-42 Emission Factor lbs/VMT PM	PM-10	PM-2.5	PM Emissions Potential tons/yr	PM Emissions Actual tons/yr	PM10 Emissions Potential tons/yr	PM10 Emissions Actual tons/yr	PM2.5 Emissions Potential tons/yr	PM2.5 Emissions Actual tons/yr	Remarks
HAUL TRUCKS				201	Unknown	84,359	3.68483055	0.85487123	0.15334709	N/A	155.4251	N/A	36.05823	N/A	6.468137	AP-42 13.2.2 (11/06)
797 Haul Truck	0	0	239.7													
793 Haul Truck	26	26	201													
WATER TRUCKS																
Water Truck	3	3	116.5	116.5	2000	8,792	2.88287599	0.66881983	0.10255237	2.88287599	12.67305	0.66881983	2.940116	0.01826742	0.450818	AP-42 13.2.2 (11/06)
Water Truck	2	2	71	71	2000	927	1.31827952	0.30583746	0.04689508	1.31827952	0.610986	0.30583746	0.141747	0.00040273	0.021735	AP-42 13.2.2 (11/06)
MAINTENANCE VEHICLES				31.4333333			1.59883995	0.37092677	0.05687544	2.39825993	9.216196	0.55639015	2.138134	0.08531316	0.327847	AP-42 13.2.2 (11/06)
Rubber Tired Dozers (RTDs)	8	8	33.5		1000	8,560										
Motor Graders 2x16G	4	4	27.3		1000	2,968										
Motor Graders 2x14G	0	0	20.5		1000	0										
MINE ACCESS ROAD					Unknown	328,500	0.28042799	0.06505857	0.00997565	N/A	46.0603	N/A	10.68587	N/A	1.6385	
Delivery Trucks		25	4.5	2.27777778												
Employee Vehicles		200	2													
TAILINGS ROAD					Unknown	87,600	0.26448725	0.06136036	0.00940859	N/A	11.58454	N/A	2.687584	N/A	0.412096	
Vehicles		4	2	2												
Totals						**521,707**					**235.5702**		**54.65168**		**9.319133**	

Notes:
1. It has been assumed that each maintenance vehicle travels a total of 1000 mi /year.
2. Emision Factors from AP-42 13.2.2 (11/06)
3. Use equation (1a) for vehciles traveling on unpaved surfaces at industrial sites.
E = k*((s/12)^a)*((W/3)^b)
E = size specific emission factor (lb/VMT)
s = surface material silt content (%) 3 AP-42 Section 13.2.2 - Unpaved Roads Additional Files (EPA) r13s0202_dec03.xls (Arizona Surface Material Silt Content)
W = mean vehicle weight (tons). Pg. 13.2.2-6 states only one emission factor should be calcualted that represents the "fleet" average. To reflect operating conditions, calculated one for all haul trucks, one each for both types of water trucks, and another for maintenance vehicles.

For k, a, and b (empirical constants)	PM-10	PM-30 (assun	PM-2.5
k (lb/VMT)	1.5	4.9	0.23
a	0.9	0.7	0.9
b	0.45	0.45	0.45

4. Add control factor for mitigatin from rainfall and other precipitation using equation (2)
Eext = E((365-P)/365)
P 53 number of days in a year with at least 0.01 inches of precipitation (Using Figure 13.2.2-1)
5. Previous emission estimates provided a PM control efficiency for wet suppression program of 65%. In absence of road moisture testing, continued to apply this control efficiency for all roads traveling in mine area.
6. For the small water truck, tailing road vehicles and mine access road vehicles, applied an additional 80% control efficiency because MgCl2 is applied to the tailing and mine access roads Pg. 13.2.2-13 states chemcial dust suppressants provide a PM-10 control efficiency of about 80% when applied at regular intervals of 2 weeks to 1 month.
7. Employee vehicles on mine access includes contractors and is estimated at 100 vehicles/shift.
8. VMT: Subtract % emissions from haul truck traffic below pit lip. Data Input C8

FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY FACILITY

STORAGE TANK EMISSIONS INVENTORY

OPERATION 219, PROCESS 444, SOURCE 078

Nearest City: Tucson, AZ

Stack: S 078

Fugitive-Non-Point

2012

Location	Tank No.	Tank Cap gal	H/V	Roof Type	Tank Dia ft	Tank Ht ft	Shell Color	Annual Thruput (gal)	Solvent Name	Vapor Mol Wt	Storage Temp (F)	Vap Pres psia	Working Loss (lbs)	Breathing Loss (lbs)	Total Loss (lbs)
Sierrita Pit	SP-14	12000	H	Cylnd	7.00	36.00	White	88,780	Gasoline	66.00	68.00	6.25	888.9405	802.8967	1691.837
												Subtotal	***888.9405***	***802.8967***	***1691.837***
Twin Buttes	TB-4	12000	H	Cylnd	8.00	32.00	White	0	Gasoline	66.00	68.00	6.37	0	0	0
NO LONGER IN USE	TB-5	12000	H	Cylnd	8.00	32.00	White	0	Gasoline	66.00	68.00	6.37	0	0	0
												Subtotal	***0***	***0***	***0***
Mill Area	ML-12(1)	12000	V	Cylnd	8.00	32.00	White	78,916	Gasoline	66.00	68.00	6.37	790.1712	1122.41	1912.582
	ML-12(2)	12000	V	Cylnd	8.00	32.00	White	78,916	Gasoline	66.00	68.00	6.37	679.25	964.85	1644.1
												Subtotal	***1469.421***	***2087.26***	***3556.682***

Total VOC Emissions				
	lb/year	2358.362	2890.157	5248.519
	ton/year			**2.624259**
Total HAP Emissions				
	lbs/year	412.7133	505.7775	918.4908
	ton/year			**0.459245**

Note:

1. Storage tank emissions are calculated per the USEPA TANKS3.0 program.
2. HAP emission summation includes approximately 17.5 weight % HAP content in gasoline vapor (Ref. The Air Pollution Consultant. May-June, 1995, Page 1.21)
3. Total Gasoline Usage for the year was divided equally between the 3 gasoline storage tanks.

ESTIMATED AIR POLLUTANT EMISSIONS FROM TAILING IMPOUNDMENTS - SIERRITA
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Operation description:

Sierrita tailing impoundment, located southeast of Sierrita plant. Dust reduction practices have been implemented.
At any time, at most one - sixth of the total impoundment area is drying. Surface binders also applied, as necessary.
OPERATION 209, PROCESS 428, SOURCE 087

STACK : S 087
SCC: 3-03-999-99

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Total Impoundment	Drying Area	U/C Emission Cntr. Emission Factor	Avg. Annual Drying Area	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point	Surface wetting & Application	3615 acre	602.5 acre	0.3934 tpy/acre	603 acre	237 tons/yr	AMC Report - 7/83 ** Page 52-57
PM-10	Fugitive Non-Point	of binders	3615 acre	602.5 acre	**0.1967** tpy/acre	603 acre	119 tons/yr	AMC Report - 7/83 ** Page 52-57

Notes:
Reference: Uncontrolled emission factor for wind erosion calculated as described in "American Mining Report of Fugitive Dust Emission Factors for the Mining Industry", July 1983.
Page 52-57
EF = AIKCLV

A	0.025	Clay Loam
I	47	Clay Loam
K	*1*	*Field with a smooth surface*
C	*((0.345*(U^3))/(PE,*	*0.334811852*
U	6.8	Mean annual windspeed (mph)
PE	18	Figure 14
L	1	Greater than 2000 feet across
V	1	Unvegetated

ESTIMATED AIR POLLUTANT EMISSIONS FROM DRILLING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 088
SCC: 3-05-020-10

Operation Description:

Drilling for the ore, leach and waste productions.
Includes operations in the Sierrita, Ocotillo and Esperanza pits.
OPERATION , PROCESS , SOURCE 088

Pollutant	Fugitive/ Point Source	Air Pollution Control	Controlled Emission Factor	Max Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point	Water Spray	0.00016 lb/ton mined	131,400,000 tons rock/yr	10.512	AP-42, Section 11.19 8/04
PM-10	Fugitive Non-Point	Water Spray	0.00008 lb/ton mined	131,400,000 tons rock/yr	5.256	AP-42, Section 11.19 8/04

Note:

1. Maximum production is based on the maximum potential for rock blasting.
2. This source was added to the Emission Inventory in 2003 (for 2002 emissions reporting).
3. Actual production - total loaded * percentage above the pit lip. Do no count emissions below pit lip.

ESTIMATED AIR POLLUTANT EMISSIONS FROM AMMONIUM NITRATE STORAGE
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 089	**Operation Description:**
SCC: 3-05-020-10	Ammonium Nitrate Storage Includes operations in the Sierrita pit. OPERATION, PROCESS, SOURCE 089

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Actual Annual Production	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point		0.4 lb/ton	Unknown tons/yr	9631.87 tons/yr	Unknown	1.926374	AP-42, Section 8.3.2 7/93 Publish E.F. =.02 @95%control
PM-10	Fugitive Non-Point		0.2 lb/ton waste	Unknown tons/yr	9631.87 tons rock/yr	Unknown	0.963187	PM/2

Notes:

1. This source was added to the Emission Inventory in 2003 (for 2002 emissions reporting).
2. The published E.F. is 0.02 lb/ton with a scrubber operating at 95% control efficiency (for bulk loading). There is no scrubber at this source. Therefore, emission factor = 0.02/(1-0.95)

ESTIMATED AIR POLLUTANT EMISSIONS FROM EL JAY PORTABLE CRUSHED STONE PLANT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Non-Fugitive
Point Source

SOURCE NO.: 093
SSC:3-05-020-02/06

Operation Description:
El Jay Crushing Plant for Haul Road surfacing material
OPERATION 224, PROCESS 449, SOURCE 093

I.D.	Description	Process Rate Pollutant	Process Rate tph	Process Rate tpy	Control Efficiency %	Emission Factor lb/ton	Controlled Emissions lb/hr	Controlled Emissions tpy	ADEQ General Crushing & Screening Permit Application
1	Truck/Loader transfer and feed material	PM	273	254,739	Included in	0.00023	0.0637	0.0297	Form 2
		PM10			emission factor	***0.00011***	***0.0301***	***0.0140***	Table 1
2	Grizzly Feeder [35"x20']	PM	273	254,739	Included in	0.00007	0.0200	0.0093	Form 2
		PM10			emission factor	***0.00006***	***0.0150***	***0.0070***	Table 2
3	Grizzly Feeder [35"x20'] to Screen Feed Conveyor [36"x60']	PM	273	254,739	Included in	0.00010	0.0278	0.0130	Form 2
		PM10			emission factor	***0.00005***	***0.0131***	***0.0061***	Table 5
4	Screen Feed Conveyor [36"x60] to Three Deck Screen [5'x16']	PM	369	343,898	Included in	0.00010	0.0375	0.0175	Form 2
		PM10			emission factor	***0.00005***	***0.0177***	***0.0083***	Table 5
5	Three Deck Screen [5'x16']	PM	369	343,898	Included in	0.00279	1.0306	0.4803	Form 2
		PM10			emission factor	***0.00210***	***0.7749***	***0.3611***	Table 4
6	Three Deck Screen [5'x16'] to Crusher Conveyor [30"x40]	PM	96	89,159	Included in	0.00010	0.0097	0.0045	Form 2
		PM10			emission factor	***0.00005***	***0.0046***	***0.0021***	Table 5
7	Crusher Conveyor [30"x40'] to Cone Crusher [54"]	PM	96	89,159	Included in	0.00010	0.0097	0.0045	Form 2
		PM10			emission factor	***0.00005***	***0.0046***	***0.0021***	Table 5
8	Cone Crusher [54"]	PM	96	89,159	Included in	0.00097	0.0931	0.0434	Form 2
		PM10			emission factor	***0.00059***	***0.0564***	***0.0263***	Table 3
9	Cone Crusher [54"] to Recirculating Conveyor [30"x60']	PM	96	89,159	Included in	0.00010	0.0097	0.0045	Form 2
		PM10			emission factor	***0.00005***	***0.0046***	***0.0021***	Table 5
10	Recirculating Conveyor [30"x60'] to Feed Conveyor [36"x60']	PM	96	89,159	Included in	0.00010	0.0097	0.0045	Form 2
		PM10			emission factor	***0.00005***	***0.0046***	***0.0021***	Table 5B
11	Three Deck Screen [5'x16'] to Product Conveyor [30"x20']	PM	161	150,296	Included in	0.00010	0.0164	0.0076	Form 2
		PM10			emission factor	***0.00005***	***0.0077***	***0.0036***	Table 5
12	Product Conveyor [30"x20'] to Scale Belt	PM	161	150,296	Included in	0.00010	0.0164	0.0076	Form 2
		PM10			emission factor	***0.00005***	***0.0077***	***0.0036***	Table 5
13	Radial Stacker [30"x70'] to Product Stockpile	PM	161	150,296	Included in	0.00123	0.1984	0.0924	Form 2
		PM10			emission factor	***0.00058***	***0.0935***	***0.0436***	Table 5A
14	Truck/Loader Handling of Product from Stockpile	PM	161	150,296	Included in	0.00023	0.0376	0.0175	Form 2
		PM10			emission factor	***0.00011***	***0.0177***	***0.0083***	Table 1
15	Three Deck Screen [5'x16'] to Fines Conveyor [30"x60']	PM	112	104,443	Included in	0.00010	0.0114	0.0053	Form 2
		PM10			emission factor	***0.00005***	***0.0054***	***0.0025***	Table 5
16	Stacker [30"x60'] to Fine Product Stockpile	PM	112	104,443	Included in	0.00123	0.1378	0.0642	Form 2
		PM10			emission factor	***0.00058***	***0.0650***	***0.0303***	Table 5
17	Truck/Loader Handling of Product from Fine Stockpile	PM	112	104,443	Included in	0.00023	0.0261	0.0122	Form 2
		PM10			emission factor	***0.00011***	***0.0123***	***0.0057***	Table 1
18	Scale Belt to Radial Stacker [30"x70']	PM	161	150,296	Included in	0.00010	0.0164	0.0076	Form 2
		PM10			emission factor	***0.00005***	***0.0077***	***0.0036***	Table 5
19	Feed, Product and Fines Storage piles	PM	273	2,364,044	Included in	Not Anticipated	0.0000	0.0000	Form 2
		PM10			emission factor	***0.00005***	***0.0131***	***0.0567***	Table 12
	TOTAL EMISSIONS	PM					1.7723	0.8259	
		PM10					***1.1559***	***0.5893***	
	Annual Operation (Hours per Year)	932.00							
	Feed Rate (Tons per Hour)	273.33							

Est. Screen Analysis per T. Comi, M. Ioli - Dec. 1994	0	-2", +1.5"	-1.5", +3/8"	-3/8"
Feed Material to Grizzly Feeder	0.35	0.02	0.29	0.34
Recycled through Crusher	0	0	0.2	0.8

Notes: PM10 EF from general crushing and screening permit. PM emission factors are not determined under the general crushing and screening permit calculations from Form 2 for rock products sources.
PM factor are based on the ratio of metalic mineral emission factors (PM:PM10) times the non-metalic minerals PM10 factors.

ESTIMATED AIR POLLUTANT EMISSIONS FROM OVERLAND ORE TRANSPORT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK: S 095
SCC: 3-03-024-04

Operation description:

The 6A/6B Overland Conveyor transfer point A2 to A3. Single transfer point.
Maximum capacity: 5,000 tph.
OPERATION 204, PROCESS 470, SOURCE 095

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy.	U/C Emission Cntr. Emission Factor	Max. Annual Throughput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	**Non-Fugitive - Point Source**	--	Water	--	0.00014			AP-42, Section 11.19.2
	A2 to A3 CTP		sprays			43,800,000	3.066	
	Magnetic Steel Recovery Plant		& Enclosed			11,388,000.00	0.79716	
	Total		Transfer		lb/ton rock/point	tons rock/yr	**3.86316**	
PM-10	**Non-Fugitive - Point Source**	--	Points	--	0.000046			AP-42, Section 11.19.2
	A2 to A3 CTP					43,800,000	1.0074	
	Magnetic Steel Recovery Plant					11,388,000.00	0.261924	
	Total				lb/ton rock/point	tons rock/yr	**1.269324**	
PM-2.5	**Non-Fugitive - Point Source**	--		--	0.000013			AP-42, Section 11.19.2
	A2 to A3 CTP					43,800,000	0.2847	
	Magnetic Steel Recovery Plant					11,388,000.00	0.074022	
	Total				lb/ton rock/point	tons rock/yr	**0.358722**	
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001230769		4.75466E-05	
Arsenic Compounds					0.0012		4.63579E-05	
Beryllium Compounds					0.0001		3.86316E-06	
Cadmium Compounds					0.00005		1.93158E-06	
Chromium Compounds					0.014576923		0.00056313	
Cobalt Compounds					0.000623077		2.40705E-05	
Lead Compounds					0.003		0.000115895	
Manganese Compounds					0.023238462		0.000897739	
Mercury Compounds					1.84286E-06		7.11925E-08	
Nickel Compounds					0.001076923		4.16033E-05	
Selenium Compounds					0		0	
					(%)			

Total HAPs							*0.001742208*	

Notes:

1. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
2. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).

ESTIMATED AIR POLLUTANT EMISSIONS FROM OVERLAND ORE TRANSPORT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK: S 096
SCC: 3-03-024-04

Operation description:

The 6A/6B Overland Conveyor transfer point B3 to B4 Stacker. Single transfer point.
TB-E (007) conveyor relocated from Twin Buttes. Maximun Capacity = 7,000 tph
OPERATION 204, PROCESS 471, SOURCE 096

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy.	U/C Emission Cntr. Emission Factor	Max. Annual Throughput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	--	Water sprays & Enclosed		0.000140 lb/ton rock/point	61,320,000 tons rock/yr	4.2924	AP-42, Section 11.19.2
PM-10	Non-Fugitive Point Source		Transfer Points		0.000046 lb/ton rock/point	61,320,000 tons rock/yr	1.41036	AP-42, Section 11.19.2
PM-2.5	Non-Fugitive Point Source		Transfer Points		0.000013 lb/ton rock/point	61,320,000 tons rock/yr	0.39858	AP-42, Section 11.19.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001230769		5.28295E-05	
Arsenic Compounds					0.0012		5.15088E-05	
Beryllium Compounds					0.0001		4.2924E-06	
Cadmium Compounds					0.00005		2.1462E-06	
Chromium Compounds					0.014576923		0.0006257	
Cobalt Compounds					0.000623077		2.6745E-05	
Lead Compounds					0.003		0.000128772	
Manganese Compounds					0.023238462		0.000997488	
Mercury Compounds					1.84286E-06		7.91028E-08	
Nickel Compounds					0.001076923		4.62258E-05	
Selenium Compounds					0		0	
					(%)			
Total HAPs							*0.001935786*	

Notes:
1. Crushed coarse ore stockpile maximum throughput is the sum of Sierrita and Esperanza maximum throughput.
2. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
3. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).

ESTIMATED AIR POLLUTANT EMISSIONS FROM HAUL TRUCK LOADING AND DUMPING
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 097

Operation Description:

Haul truck dumping of ore, leach and waste productions.
Includes operations in the Sierrita pit
OPERATION 280, PROCESS 490, SOURCE 097

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Actual Annual Production	Potential Emissions tons/yr	Actual Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive							
Unloading at Primary Crusher	Non-Point	Water Spray	4.81995E-05 lb/ton waste		38,644,318 tons rock/yr		0.931318773	AP-42, Section 13.2.4 11/06
Unloading to Leach & Waste Plus Fines Rehandled	Fugitive Non-Point	Water Spray	0.003531688 lb/ton waste		48,244,445 tons rock/yr		85.19215346	AP-42, Section 13.2.4 11/06
Total							***86.12347223***	
PM-10	Fugitive							
Unloading At Primary Crusher	Non-Point	Water Spray	2.27971E-05 lb/ton waste		38,644,318 tons rock/yr		0.440488609	AP-42, Section 13.2.4 11/06
Unloading to Leach & Waste Plus Fines Rehandled	Fugitive Non-Point	Water Spray	0.001670393 lb/ton waste		48,244,445 tons rock/yr		40.29358609	AP-42, Section 13.2.4 11/06
Total							***40.7340747***	
PM-2.5	Fugitive							
Unloading At Primary Crusher	Non-Point	Water Spray	3.45213E-06 lb/ton waste		38,644,318 tons rock/yr		0.066702561	AP-42, Section 13.2.4 11/06
Unloading to Leach & Waste Plus Fines Rehandled	Fugitive Non-Point	Water Spray	0.000252945 lb/ton waste		48,244,445 tons rock/yr		6.10160018	AP-42, Section 13.2.4 11/06
Total							***6.168302741***	
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001230769	0	1.14624E-05	
Arsenic Compounds					0.0012	0	1.11758E-05	
Beryllium Compounds					0.0001	0	9.31319E-07	
Cadmium Compounds					0.00005	0	4.65659E-07	
Chromium Compounds					0.014576923	0	0.000135758	
Cobalt Compounds					0.000623077	0	5.80283E-06	
Lead Compounds					0.003	0	2.79396E-05	
Manganese Compounds					0.023238462	0	0.000216424	

Mercury Compounds					1.84286E-06	0	1.71629E-08	
Nickel Compounds					0.001076923	0	1.00296E-05	
Selenium Compounds					0	0	0	
					(%)			
Total HAPs						*0*	*0.000420006*	

Notes:

1. Maximum production is based on the maximum potential for rock blasting = 131400000 tons rock/yr

2. Formula for Emisssion Factor

E = (k)(0.0032) [(U/5)^1.3 / [(M/2)^1.4]

E = emission factor (lb/ton)

k = particulate size multiplier (dimensionless) =

	0.74	for PM	pg. 13.2.4-4
	0.35	for PM10	pg. 13.2.4-4
	0.053	for PM2.5	pg. 13.2.4-4
U = mean wind speed (mph)	6.8	At unloading to leach and waste	
U = mean wind speed (mph)	0.25	At unloading at Primary	
M = material moisture content (%)	2	C&C L. Thompsen Email 3/2/04	

3. The windspeed for material unloaded to the primary crusher was assumed to be 0.25 MPH because the primary crusher has draft towards Ducson wet scrubber. In addition the material is unloaded under parking bay cover and is below the pit ri

4. The blast/dump reconcilliation report is used for waste, leach, fines, and ore (handled twice) dumping, not the monthly operating report because the monthly operating report tonage does not include material that might be handled twice in the pi

5. HAPs include only those for material dumped at primary crusher because assay is available for "ore".

6. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)

7. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).

ESTIMATED AIR POLLUTANT EMISSIONS FROM HAUL TRUCK LOADING AND DUMPING
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 097

Operation Description:

Haul truck loading for the ore, leach and waste productions.
Includes operations in the Sierrita, Ocotillo and Esperanza pits.
OPERATION 280, PROCESS 490, SOURCE 097

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point	Water Spray	0.003531688 lb/ton waste	131,400,000 tons rock/yr	232.0318745	AP-42, Section 13.2.4 11/06
PM-10	Fugitive Non-Point	Water Spray	0.001670393 lb/ton waste	131,400,000 tons rock/yr	109.7448055	AP-42, Section 13.2.4 11/06
PM-2.5	Fugitive Non-Point	Water Spray	0.000252945 lb/ton waste	131,400,000 tons rock/yr	16.61849912	AP-42, Section 13.2.4 11/06

Notes:
1. Maximum production is based on the maximum potential for rock blasting. Actual Producation is total loaded above 3850 elevation. Do not count emissions below 50 feet below pit lip (4050 elevation).
2. Formula for Emisssion Factor
E = (k)(0.0032) [(U/5)^1.3 / [(M/2)^1.4]
E = emission factor (lb/ton)
k = particulate size multiplier (dimensionless) =

0.74	for PM	pg. 13.2.4-4
0.35	for PM10	pg. 13.2.4-4
0.053	for PM2.5	pg. 13.2.4-4
U = mean wind speed (mph)	6.8	See Data Input Spreadsheet
M = material moisture content (%)	2	C&C L. Thompsen Email 3/2/04

2. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).

ESTIMATED AIR POLLUTANT EMISSIONS FROM OVERLAND ORE TRANSPORT - TWIN BUTTES STACKER
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 102
SCC: 3-03-024-01

Operation description:

The Sierrita ore overland conveyor B4 Stacker to Coarse Ore Stockpile located north of the Sierrita fine crushing.
Single belt transfer. Maximum capacity 7,000 tph.
OPERATION 204, PROCESS 473, SOURCE 102

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	Emission Factor	Max. Annual Throughput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point	--	Wet ore prior to stockpile		0.002001956 lb/ton rock/point	61,320,000 tons rock/yr	61.37996929	AP-42, Section 13.2.4 11/06 (formerly Sec. 11.2.3)
PM-10	Fugitive Non-Point		discharge		0.000946871 lb/ton rock/point	61,320,000 tons rock/yr	29.03106655	AP-42, Section 13.2.4 11/06 (formerly Sec. 11.2.3)
PM-2.5	Fugitive Non-Point				0.000143383 lb/ton rock/point	61,320,000 tons rock/yr	4.396132935	AP-42, Section 13.2.4 11/06 (formerly Sec. 11.2.3)
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001230769		0.000755446	
Arsenic Compounds					0.0012		0.00073656	
Beryllium Compounds					0.0001		6.138E-05	
Cadmium Compounds					0.00005		3.069E-05	
Chromium Compounds					0.014576923		0.008947311	
Cobalt Compounds					0.000623077		0.000382444	
Lead Compounds					0.003		0.001841399	
Manganese Compounds					0.023238462		0.014263761	
Mercury Compounds					1.84286E-06		1.13115E-06	
Nickel Compounds					*0.001076923*		0.000661015	
Selenium Compounds					0		0	
					(%)			
Total HAPs							*0.027681137*	

Notes:
1. Maximum potential throughput based on the capacity of conveyor segment (7,000 tph)
2. SA Stacker relocated from Twin Buttes in 1995.
3. AP-42, Section 13.2.4, Aggregate Handling & Storage Piles

Formula for Emisssion Factor
E = (k)(0.0032) [(U/5)^1.3 / [(M/2)^1.4]
E = emission factor (lb/ton)
k = particulate size multiplier (dimensionless) =

	0.74	for PM	pg. 13.2.4-4
	0.35	for PM10	pg. 13.2.4-4
	0.053	for PM2.5	pg. 13.2.4-4
U = mean wind speed (mph)		6.8	Update wind speed with annual mean daily windspeed.
M = material moisture content (%)		3	C&C L. Thompsen Email 3/2/04 + 1% moisture added for water sprays.

4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)

5. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).

ESTIMATED AIR POLLUTANT EMISSIONS FROM TWIN BUTTES ELECTROWINNING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 105
SCC: 3-03-024-02/03

Operation description:

Twin Buttes Electrowinning operations - This operation reclaims metallic copper from pregnant electrolyte solution from the SX #1 & SX #2 plants. H2SO4 emissions are released from the surface of the electrowinning cells. Tankhouse is ventilated by 3 fans. OPERATION 216, PROCESS 440, SOURCE 105

Pollutant	Fugitive/ Point Source	Primary Control	No. of Cells	Area per cell (ft2)	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Total Sol'n Throughput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	--	--	--	--	-- 0	72,533,000	19,279,042	0	--
PM-10	--			--	-- 0	72,533,000	19,279,042	0	--
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
VOCs (not anticipated)	--	--	--	--	--	--	--	--	--
H2SO4 Sulfuric acid	Fugitive Non-Point	Surfactant & Ball blanket	18	94.5	0.000157 lb/hr/ft2	72533000 Gal/yr	19,279,042 Gal/yr	1.16970966	Emission factor based on testing at Twin Buttes plant, with controls
HAPs Cobalt	Fugitive Non-Point	Surfactant & Ball blanket			0.008 %			9.35768E-05	

Notes:
Max. potential emissions rate is independent of throughput. Assumes all cells are filled and operational for entire 8,760 hours/year.
Emission controls consist of use of anti-foam surfactant, and use of styrofoam ball blanket floating on top of cells.

ESTIMATED AIR POLLUTANT EMISSIONS FROM MINING OPERATIONS - SIERRITA PRIMARY CRUSHERS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 113A

SCC: 3-03-024-01

Operation description:

6A Primary Crusher: Primary crushing of low-moisture sulfide ore in Sierrita pit by 2 stationary primary crushers. (A-Side)
Controlled by 1 FARR Cartridge-Style Dust Collector
OPERATION 204, PROCESS 407, SOURCE 113A

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy (1)(2)	U/C Emission Cntr. Emission Factor (3)(4)	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon SI 230 3221	Water sprays		**0.00001** lb/ton rock	42,591,120 tons rock/yr	0.2981	Source Test: 3/11/13
PM-10	Non-Fugitive Point Source	Wet dust collector			**0.00001** lb/ton rock	42,591,120 tons rock/yr	0.2981	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source			0.9935	**--** **0.000002** lb/ton	42,591,120 tons/yr	0.0447	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	**--**	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	**--**	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								--
Antimony Compounds					0.001231		3.66939E-06	
Arsenic Compounds					0.001200		3.57765E-06	
Beryllium Compounds					0.000100		2.98138E-07	
Cadmium Compounds					0.000050		1.49069E-07	
Chromium Compounds					0.014577		4.34593E-05	
Cobalt Compounds					0.000623		1.85763E-06	
Lead Compounds					0.003000		8.94414E-06	
Manganese Compounds					0.023238		6.92826E-05	
Mercury Compounds					0.000002		5.49425E-09	
Nickel Compounds					0.001077		3.21072E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.00013*	

0.00003 03/26-27/2015

Notes:

1. Unit Installed and Startup: 11/9/12
2. Throughput: 11/9/12 - 12/31/12
3 - PM emissions were assumed to be all PM-10.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM MINING OPERATIONS - SIERRITA PRIMARY CRUSHERS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 113B SCC: 3-03-024-01	**Operation description:** 6B Primary Crusher: Primary crushing of low-moisture sulfide ore in Sierrita pit by 2 stationary primary crushers. (B-Side) Controlled by 1 FARR Cartridge-Style Dust Collector OPERATION 204, PROCESS 407, SOURCE 113B

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon SI 230 3221	Water sprays		**0.00001** lb/ton rock	42,591,120 tons rock/yr	0.2981	Source Test: 3/11/13 (A-Side)
PM-10	Non-Fugitive Point Source	Wet dust collector			**0.00001** lb/ton rock	42,591,120 tons rock/yr	0.2981	PM-10 assumed = PM
PM-2.5	Non-Fugitive Point Source			0.9935	**--** **0.000002** lb/ton	42,591,120 tons/yr	0.0447	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	**--**	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	**--**	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								--
Antimony Compounds					0.001231		3.66939E-06	
Arsenic Compounds					0.001200		3.57765E-06	
Beryllium Compounds					0.000100		2.98138E-07	
Cadmium Compounds					0.000050		1.49069E-07	
Chromium Compounds					0.014577		4.34593E-05	
Cobalt Compounds					0.000623		1.85763E-06	
Lead Compounds					0.003000		8.94414E-06	
Manganese Compounds					0.023238		6.92826E-05	
Mercury Compounds					0.000002		5.49425E-09	
Nickel Compounds					0.001077		3.21072E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.000134*	

Notes:

1. Unit Installed and Startup: 11/9/12
2. Throughput: 11/9/12 - 12/31/12
3 - PM emissions were assumed to be all PM-10.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B
6. Emission factor is based on test results on the A-side FARR (ID 113A) The units are identical

ESTIMATED AIR POLLUTANT EMISSIONS FROM #2 MOLY SULFIDE LOADOUT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 117
SCC: 3-05-024-01

Operation Description:

Moly Sulfide Screw Conveyor Loadout #2

OPERATION 209, PROCESS 462, SOURCE 117

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	None	0.01 lb/ton	87,600 tons/yr	0.438	AP-42, Section 11.24-2 1/95 - High Moisture
PM-10	Non-Fugitive Point Source	None	0.004 lb/ton	87,600 tons/yr	0.1752	AP-42, Section 11.24-2 1/95 - High Moisture
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--
HAPs						
Hazardous Air Pollutants found in Particulate Matter:						
Antimony Compounds			0.002300		0.000010074	
Arsenic Compounds			0.006500		0.00002847	
Cadmium Compounds			0.001285		5.62611E-06	
Chromium Compounds			0.001300		0.000005694	
Cobalt Compounds			0.002800		0.000012264	
Lead Compounds			0.034500		0.00015111	
Manganese Compounds			0.001000		0.00000438	
Mercury Compounds			0.000050		0.000000219	
Nickel Compounds			0.001000		0.00000438	
Selenium Compounds			0.038800		0.000169944	
			(%)			
Total HAPs					*0.000392161*	

Notes:
1. This source was added to the Emission Inventory in 2003 (for 2002 emissions reporting).
2. HAPs Source: Tim Fisher (TRI RY 2009 Files). - Sulfide
3. EF based on AP-42, Section 11.24-2 1/95 - High Moisture

ESTIMATED AIR POLLUTANT EMISSIONS FROM MOLY LEACH PLANT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 118
SCC: 3-03-024-11

Operation Description:

Moly Leach Plant Production - Wet Process

OPERATION , PROCESS , SOURCE 118

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point	Wet Process	0 lb/ton	73,584 tons/yr	0	
PM-10	Fugitive Non-Point	Wet Process	0 lb/ton	73,584 tons/yr	0	
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--
Non-Methane VOC	Non-Fugitive Point Source	Fume Scrubber	0.391 lb/hr	8760 hr/yr	1.71258	-- Source Test - 3/24/07
HAPs	Non-Fugitive	Fume Scrubber	--	--	--	--
Ethylidene Dichloride (1,1-Dichloroethane)	Point Source		0.0001	8760	0.000438	Source Test - 3/24/07
Benzene			0.0004	8760	0.001752	Source Test - 3/24/07
Bromomethane (methyl bromide)			0.0002	8760	0.000876	Source Test - 3/24/07
Carbon Disulfide			0.0021	8760	0.009198	Source Test - 3/24/07
Carbon tetrachloride			0.002	8760	0.00876	Source Test - 3/24/07
Chlorine			0.11	8760	0.4818	Source Test - 3/24/07
Chloroethane (ethyl chloride)			0.0036	8760	0.015768	Source Test - 3/24/07
Chloroform			0.0125	8760	0.05475	Source Test - 3/24/07
Chloromethane (methyl chloride)			0.0015	8760	0.00657	Source Test - 3/24/07
Ethylbenzene			0.0002	8760	0.000876	Source Test - 3/24/07
Hydrogen Chloride			0.032	8760	0.14016	Source Test - 3/24/07
Methylene Chloride			0.0004	8760	0.001752	Source Test - 3/24/07
Toluene			0.0012	8760	0.005256	Source Test - 3/24/07
Xylenes (Total)			0.0006	8760	0.002628	Source Test - 3/24/07
Total HAPs			lb/hr	hr/yr	*0.730584* tons/yr	

Notes:

1. This source was added to the Emission Inventory in 2003 (for 2002 emissions reporting).
2. VOCs are based on an emission factor which includes Methane.

ESTIMATED AIR POLLUTANT EMISSIONS FROM RHENIUM OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 119
SCC: 1-02-00-6-03

Operation Description:

Rhenium Plant Production - Wet Process
1 Storage Bin and 1 enclosed screw conveyor
OPERATION , PROCESS , SOURCE 119

Pollutant	Fugitive/ Point Source	Air Pollution Control	U/C Emission Factor	Max Annual Production	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Fugitive Non-Point		0.12 lb/ton	87.6 tons/yr	0.015768	AP-42 11.24 for low moisture ore New Process
PM-10	Fugitive Non-Point		0.06 lb/ton	87.6 tons/yr	0.007884	AP-42 11.24 for low moisture ore
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--
HAPs (not anticipated)	--	--	--	--	--	--

Note:

1. One storage bin and one screw conveyor provides one unloading operation and 2 conveyor transfer points. Minor Permit Revision submitted 12/12/06.
2. Note, these emissions are overly conservative, the screw conveyor was not operation for much of the year. (2009)

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 121
SCC: 3-03-024-02/03

Operation description:

Sierrita fine crushing operations - No. 2T, 3T & 4T Tertiary Discharge Screens, 7C/#1 scalping screen transfer point, 8D/8B CTP, 7A/7B CTP.
This part of operations is exhausted by 1 Ducon wet dust collector (#12) on North side of fine crushing building.
OPERATION 207, PROCESS , SOURCE 121

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor	Max. Annual Thruput	Actual Annual Ore Thru-put	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	Ducon wet dust collector	Water sprays on	n/c	**0.00011** lb/ton rock	1,116,900 tons rock/yr	3,057,993 tons rock/yr	0.1639	3/11/11 Source Test
PM-10	Non-Fugitive Point Source	SI 40 265 2012 (1 unit)	material transfer	n/c	**0.00011** lb/ton rock	1,116,900 tons rock/yr	3,057,993 tons rock/yr	0.1639	3/11/11 Source Test
PM-2.5	Non-Fugitive Point Source			n/c	**--** **0.00002** lb/ton	1,116,900 tons	3,057,993 tons/year	0.0246	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--	--
HAPs									
Hazardous Air Pollutants found in Particulate Matter:									
Antimony Compounds					0.001231			2.01734E-06	
Arsenic Compounds					0.001200			1.96691E-06	
Beryllium Compounds					0.000100			1.63909E-07	
Cadmium Compounds					0.000050			8.19544E-08	
Chromium Compounds					0.014577			2.38929E-05	
Cobalt Compounds					0.000623			1.02128E-06	
Lead Compounds					0.003000			4.91727E-06	
Manganese Compounds					0.023238			3.80899E-05	
Mercury Compounds					0.000002			3.02061E-09	
Nickel Compounds					0.001077			1.76517E-06	
Selenium Compounds					0.000000			0	
					(%)				
Total HAPs								*0.0001*	

Notes:
n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.
#12 Wet Scrubber initial start-up March, 2004. Minor Permit Revision No. 31648.
1. Controlled emission factor based on source test data: 0.6 lb/hr at process rate of 5597 tph (total fine crusher throughput)

3. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
4. Throughput based on tertiary crushing limit divided by 5 to reflect operation of two tertiary crushers.
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B
6. Removed from service as of 5/24/12 with installation of ID 311
7. Throughput covers 1/1/12 - 5/23/12

ESTIMATED AIR POLLUTANT EMISSIONS FROM DECANT SOLIDS HANDLING FACILITY
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 123
SCC: 3-03-024-04

Operation Description:

Decant Solids Handling Facility: stockpile, front-end loader, 5tph ball mill & screw conveyor.
Minor Permit Revision No. 33180. Initial Start-up 9/14/04.
OPERATION , PROCESS , SOURCE 123

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy.	U/C Controlled Emission Factor lbs/ton	Max Annual Production tons/year	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	**Non-Fugitive**						
	Screw Discharge	Enclosed	0.75	0.03	43,800.00	0.657	AP-42, Section 11.24-2 1/95 - Low Moisture
	Fugitive			0.12	43,800.00		AP-42, Section 11.24-2 1/95 - Low Moisture
	Feed Hopper	Water Sprays	0.7	0.036		0.7884	" "
	Stockpile			0.002584094		0.056591652	AP-42 Sect 13.2.4 (See Below)
	Total Fugitive					0.844991652	
PM-10	**Non-Fugitive**						
	Screw Discharge	Enclosed	0.75	0.015	43,800.00	0.3285	AP-42, Section 11.24-2 1/95 - Low Moisture
	Fugitive			0.06	43,800.00		AP-42, Section 11.24-2 1/95 - Low Moisture
	Feed Hopper	Water Sprays	0.7	0.018		0.3942	" "
	Stockpile			0.001222206		0.026766322	AP-42 Sect 13.2.4 (See Below)
	Total Fugitive					0.420966322	
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--
HAPs							
Hazardous Air Pollutants found in Particulate Matter:							
Antimony Compounds				0.028000		0.000420558	
Arsenic Compounds				0.252500		0.002133604	
Beryllium Compounds				0.001000		8.44992E-06	
Cadmium Compounds				0.010583		0.000172867	
Chromium Compounds				0.003083		2.77988E-05	
Cobalt Compounds				0.010333		0.000174632	
Lead Compounds				0.255333		0.002996315	
Manganese Compounds				0.004667		3.94329E-05	
Mercury Compounds				0.000200		1.68998E-06	
Nickel Compounds				0.004083		5.06003E-05	
Selenium Compounds				0.019500		0.000169993	
Total HAPs						*0.0062*	

Notes:
1. This source was added to the Emission Inventory in 2005 (for 2004 emissions reporting). Start-up 9/14/04.
2. HAPS Source: Sierrita Monthly Composite Assay Report for 2009 from Miami (see Assay.xls) (TRI RY 2009 Files)
3. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).
4. The Screw Conveyor is considered to be a non-fugitive source, and the others are fugitive sources as per Title V Permit #42862 - Technical Support Document.

Stockpile: AP-42, Section 13.2.4, Aggregate Handling & Storage Piles
Formula for Emisssion Factor
E = (k)(0.0032) [(U/5)^1.3 / [(M/2)^1.4]
E = emission factor (lb/ton)
k = particulate size multiplier (dimensionless) =
0.74 for PM pg. 13.2.4-4

ESTIMATED AIR POLLUTANT EMISSIONS FROM PORTABLE SCREENING PLANT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 124
SCC: 3-03-024-04

Operation Description:

Portable Screen Plant
Minor Permit Revision Application Submitted 11/12/2004. Started Production 11/11/2005
OPERATION , PROCESS , SOURCE 124

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy.	Emission Factor lbs/ton	Max Annual Production tpy / hpy	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	**Non-Fugitive - Point Source**				11,388,000.00		Emissions Factors from the Application for
	Feed Hopper Loading	Water Sprays		0.00011		0.62634	Crushing / Screening General Permit, ADEQ,
	Screening			0.00168		9.56592	,12/19/02.
	Stacking			0.00011		0.62634	
	Combined					**10.8186**	
PM-10	**Non-Fugitive - Point Source**				11,388,000.00		Emissions Factors from the Application for
	Feed Hopper Loading	Water Sprays		0.000055		0.31317	Crushing / Screening General Permit, ADEQ,
	Screening			0.00084		4.78296	,12/19/02.
	Stacking			0.000055		0.31317	
	Combined					**5.4093**	
HAPs							
Hazardous Air Pollutants found in Particulate Matter:							
Antimony Compounds				0.001230769		0.000133152	
Arsenic Compounds				0.0012		0.000129823	
Beryllium Compounds				0.0001		1.08186E-05	
Cadmium Compounds				0.00005		5.4093E-06	
Chromium Compounds				0.014576923		0.001577019	
Cobalt Compounds				0.000623077		6.74082E-05	
Lead Compounds				0.003		0.000324558	
Manganese Compounds				0.023238462		0.002514076	
Mercury Compounds				1.84286E-06		1.99371E-07	
Nickel Compounds				*0.001076923*		0.000116508	
Selenium Compounds				0		0	
				(%)			
Total HAPs						*0.004878972*	

Notes:
1. This source was added to the Emission Inventory in 2006 (for 2005 emissions reporting). Start-up production11/11/05.
2. IC Engine was removed from this unit. - 317 Notice dated 10/24/08.
3. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
4. HAPs are not included in the I-steps report because HAPs are calculated as a percentage of PM. Including HAPs in I-steps would result in double counting emissions (and fees).
5. This source is considered to be "Non-Fugitive" as per Title V Permit #42862 - Technical Support Document

ESTIMATED AIR POLLUTANT EMISSIONS FROM MAGNETIC STEEL RECOVERY PLANT
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

Stack: S 125
SCC: 3-03-024-04

Operation Description:

Magnetic Steel Recovery System
Minor Permit Revision Application Submitted 11/12/2004. Started Production 11/11/2005
OPERATION , PROCESS , SOURCE 125

Pollutant	Fugitive/ Point Source	Air Pollution Control	Control Effy.	U/C Controlled Emission Factor lbs/ton	Max Annual Production tpy / hpy	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive - Point Source CTPs(8)	Water Sprays		0.00014	11,388,000.00	6.37728	AP-42 Chapter 11.19.2
PM-10	Non-Fugitive - Point Source CTPs(8)	Water Sprays		0.000046	11,388,000.00	2.095392	AP-42 Chapter 11.19.2
PM-2.5	Non-Fugitive - Point Source CTPs(8)	Water Sprays		0.000013	11,388,000.00	0.592176	AP-42 Chapter 11.19.2
HAPs							
Hazardous Air Pollutants found in Particulate Matter:							
Antimony Compounds				0.001230769		7.84896E-05	
Arsenic Compounds				0.0012		7.65274E-05	
Beryllium Compounds				0.0001		6.37728E-06	
Cadmium Compounds				0.00005		3.18864E-06	
Chromium Compounds				0.014576923		0.000929611	
Cobalt Compounds				0.000623077		3.97354E-05	
Lead Compounds				0.003		0.000191318	
Manganese Compounds				0.023238462		0.001481982	
Mercury Compounds				1.84286E-06		1.17524E-07	
Nickel Compounds				0.001076923		6.86784E-05	
Selenium Compounds				0		0	
				(%)			
Total HAPs						*0.002876026*	

ESTIMATED AIR POLLUTANT EMISSIONS FROM STATIONARY ENGINES
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 126

Operation description:
Various Stationary Engines

Dept.	Manuf Year	Horespower Rating	Fuel Used	Max Allowed Operating Hours	PM10 (tons)	NOx/ NMHC + NOx (tons)	SOx (tons)	CO (tons)	TOC (tons)	Notes
Diesel Internal Combustion Engines (<600 bhp)										
Tailing Thickener Generator	1991	375	Diesel	1000	0.413	5.813	0.384	1.253	0.471	AP-42, See Notes
Hydromet Twin Buttes Emergency Fire Water Back-Up	Pre-2006	280	Diesel	1000	0.308	4.340	0.287	0.935	0.352	AP-42, See Notes
Mine Truck Shop Emergency Fire Water Back-Up	Post-2008	67	Diesel	1000	0.044	0.576	0.069	0.273		[40 CFR 60.4205(c) & Table 4 of Subpart IIII] Useful Life 8,000 or 10 years, whichever comes first.
Taillings Dam Pumping Station Generator	2010	268	Diesel	1000	0.044	0.886	0.275	0.768		[40 CFR 60.4205(b) & 4202(a)] Useful Life 8,000 or 10 years, whichever comes first.
2012 Menudo Bowl Generator (NSPS)	2012	49	Diesel	1000	0.012	0.302	0.050	0.221		[40 CFR 60.4205(b) & 4202(a)] Useful Life 5,000 or 7 years, whichever comes first. Check Speed
Administration Communications Room backup power Generator	2014	308	Diesel	1000	0.051	1.019	0.316	0.883		[40 CFR 60.4205(b) & 4202(a)] Useful Life 8,000 or 10 years, whichever comes first.
Sierrita Health Clinic Generator (NSPS)	2012	145	Diesel	1000	0.035	0.480	0.149	0.591		[40 CFR 60.4205(b) & 4202(a)] Useful Life 8,000 or 10 years, whichever comes first.
Sierrita Mobile Radio Tower Generator	2012	12.5	Diesel	1000	0.004	0.077	0.013	0.068		[40 CFR 60.4205(b) & 4202(a)] Useful Life 3,000 or 5 years, whichever comes first.
Diesel Internal Combustion Engines (>600 bhp)										
#3 Headwall Emergency Generator	2009	1600	Diesel	1500	0.397	12.699	8.737	6.878		[40 CFR 60.4205(b) & 4202(a)]
Natural Gas Fired Engines										
Mill Reservoir Fire Water Pump	Pre-2006	130	Natural Gas	1000	0.000043	2.250	0.000	0.175	0.065	AP-42, See Notes
Moly Roaster Emergency Generator	Pre-2006	168	Natural Gas	1000	0.000055	2.907	0.000	0.226	0.084	AP-42, See Notes
CEMS Emergency Generator	2006	20	Natural Gas	1000	0.000007	0.346	0.000	0.027	0.010	AP-42, See Notes
Administration Building Generator	Pre-2006	200	Natural Gas	1000	0.000065	3.461	0.000	0.269	0.100	AP-42, See Notes
SCC Emergency Generator	Pre-7/2008	137	Natural Gas	1000	0.000045	2.371	0.000	0.184	0.069	AP-42, See Notes
Propane Fired Engines										
Radio Hill Generator	Pre-2006	23	Propane	1000	0.005	0.150	0.000	0.139	0.089	AP-42, See Notes
Dispatch Tower Generator	Pre-2006	57	Propane	1000	0.013	0.371	0.001	0.345	0.222	AP-42, See Notes
Dispatch Tower #2 Generator	2007	63	Propane	1000	0.015	0.410	0.001	0.381	0.245	AP-42, See Notes
Mine Engineering Generator	Pre-2006	10	Propane	1000	0.002	0.065	0.000	0.060	0.039	AP-42, See Notes
Primary Crusher Generator	Pre-2006	158	Propane	1000	0.037	1.029	0.003	0.955	0.615	AP-42, See Notes
Twin Buttes Radio Hill Generator	2010	39.5	Propane	1000	0.009	0.087	0.001	0.218	0.044	40 CFR 60 Subpart JJJJ
Twin Buttes Sandcastle Generator	2010	39.5	Propane	1000	0.009	0.087	0.001	0.218	0.044	40 CFR 60 Subpart JJJJ
				Totals:	**1.400**	**39.727**	**10.287**	**15.067**	**2.448**	

Note:
1. Emissions are calculated using the following emission factors. PTE = Horsepower * operating hours * Emission Factor.
2. The calculations above are organized based on the emission factors below.
3. PTE based on proposed voluntary limitation on emergency hours allowed by EPA or approved by PDEQ.

Diesel Internal Combustion Engine Emisison Factors (<600 bhp) Section 3.3 Gasoline and Diesel Industrial Engines

Pollutant	#/hp-hr
PM10	0.0022
NOx	0.031
SOx	0.00205
CO	0.00668
TOC	0.0025141

Diesel Internal Combustion Engine Emisison Factors (>600 bhp) Section 3.4 Large Stationary Diesel and All Stationary Dual-fuel Engines

Pollutant	#/hp-hr
PM10	0.0007
NOx	0.0024
SOx	0.007281
CO	0.0055
TOC	0.000705

Per Arizona Administrative Code R18 -2- 719(H) generators will be not be allowed to use high sulfur oill. Per AAC R18-2-701(14) high sulfur oil is fuel with 0.9% sulfur or more. Thus SOx emission factor based on 0.9% sulfur

Natural Gas Emission Factors AP-42 3.2-2

	lb/MMBtu	lbs/bhp-hr = EF Lbs/MMBtu X 2545 Btu/Bhp-hrX MMBtu/1,000,000 Btu X 1/(30% efficiency)
PM10	0.0000771	6.54065E-07
NOx	4.08	0.034612
SOx	0.000588	4.9882E-06
CO	0.317	0.002689217
VOC	0.118	0.001001033

SCAQMD General Instruction Book for the AQMD 2005-2006 AER, Internal Combustion Engines (LPG, Propane, Butane)

	PM-10	NOx	SOx	CO	TOC
Propane (fuel input) (lb/1000-gal	5	139	0.35	129	83
Propane (power output) (lb/hp-hr	0.000468692	0.01302965	3.2808E-05	0.012092265	0.007780295

Assume 100% load factor and 30% engine efficiency
lb/bhp - hr EF =EF lbs/(1000) gallon X (1000 gallons)/1000 gallons X 100% load efficiency * 1 gal/90,500 Btu X 2545 Btu-bhp X 1/.30
Heating Value 90,500 Btu/gallon typical heating value for commercial grade and HD-5 Propane per AP-42 Section 1.5 Liquified Petroleum Gas Combustion

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 201
SCC: 3-03-024-02/03

Operation description:

Secondary Crushing: #1 Secondary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector
OPERATION 207, PROCESS 496, SOURCE 201

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	Emission Factor (1)	Max. Annual Throughput (2), (3)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.00009** lb/ton	13,961,250 tons/year	0.6440	Source Test Data - 6/17/10
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.00009** lb/ton	13,961,250 tons/year	0.6440	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00001** lb/ton	13,961,250 tons	0.0966	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		7.92675E-06	
Arsenic Compounds					0.001200		7.72858E-06	
Beryllium Compounds					0.000100		6.44048E-07	
Cadmium Compounds					0.000050		3.22024E-07	
Chromium Compounds					0.014577		9.38824E-05	
Cobalt Compounds					0.000623		4.01292E-06	
Lead Compounds					0.003000		1.93214E-05	
Manganese Compounds					0.023238		0.000149667	
Mercury Compounds					0.000002		1.18689E-08	
Nickel Compounds					0.001077		6.9359E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0003*	

Notes:
n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.
1. Controlled emission factor based on most recent source test data available for this unit.
2. Max throughput based on total secondary crushing throughput limit divided by 4 secondary crushing lines for PTE purposes. Each individual crushing line will capable of 1/4 total secondary crushing throughput.
3. FARR installed 9/11/09
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. EF based on stack test performed 6/17/10 - 0.15 pph / 1625.8 tph

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 202
SCC: 3-03-024-02/03

Operation description:

Secondary Crushing: #2 Secondary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector
OPERATION 207, PROCESS 496, SOURCE 202

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2), (3)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0002** lb/ton	13,961,250 tons/year	1.2978	Based on source test data for #1S & #3S - See #1 below.
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0002** lb/ton	13,961,250 tons/year	1.2978	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00003** lb/ton	13,961,250 tons	0.1947	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		1.59731E-05	
Arsenic Compounds					0.001200		1.55738E-05	
Beryllium Compounds					0.000100		1.29781E-06	
Cadmium Compounds					0.000050		6.48907E-07	
Chromium Compounds					0.014577		0.000189181	
Cobalt Compounds					0.000623		8.08638E-06	
Lead Compounds					0.003000		3.89344E-05	
Manganese Compounds					0.023238		0.000301592	
Mercury Compounds					0.000002		2.39169E-08	
Nickel Compounds					0.001077		1.39765E-05	
Selenium Compounds					0.000000		0	
Total HAPs					(%)		*0.0006*	

Notes:
n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.
1. Controlled emission factor average of most recent source test data available two identical units.

ID 201	6/17/2010	**0.0001**
ID 203	12/16/2010	**0.0003**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Actual Run Time determined based on date of initial start-up of May 22, 2008, conservatively assuming 24/7 operation from that date. 223 days left in the year, 224 counting the 22nd. = 5376 hours
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. EF based on stack test performed 3/15/10 (first one performed) - 0.39 pph / 1688.4 tph on Source ID 201, #1 Secondary Crusher. The units are identical.

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 203
SCC: 3-03-024-02/03

Operation description:

Secondary Crushing: #3 Secondary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 203

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	Emission Factor (1)	Max. Annual Throughput (2), (3)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0001** lb/ton	13,961,250 tons/year	0.6981	Source Test Data - 3/24/15
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0001** lb/ton	13,961,250 tons/year	0.6981	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00002** lb/ton	13,961,250 tons	0.1047	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		8.59154E-06	
Arsenic Compounds					0.001200		8.37675E-06	
Beryllium Compounds					0.000100		6.98063E-07	
Cadmium Compounds					0.000050		3.49031E-07	
Chromium Compounds					0.014577		0.000101756	
Cobalt Compounds					0.000623		4.34947E-06	
Lead Compounds					0.003000		2.09419E-05	
Manganese Compounds					0.023238		0.000162219	
Mercury Compounds					0.000002		1.28643E-08	
Nickel Compounds					0.001077		7.5176E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0003*	

Notes:
n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.
1. Controlled emission factor based on most recent source test data available for this unit.
2. Max throughput based on total secondary crushing throughput limit divided by 4 secondary crushing lines for PTE purposes. Each individual crushing line will be capable of 1/4 total secondary crushing throughput.
3. FARR installed 9/30/10 - throughput covers period since install.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. EF based on stack test performed 12/16/10 - 0.628 pph / 2246.3 tph

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 204
SCC: 3-03-024-02/03

Operation description:

Secondary Crushing: #4 Secondary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector
OPERATION 207, PROCESS 496, SOURCE 204

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0002** lb/ton	13,961,250 tons/year	1.2978	Based on source test data for #1S & #3S - See #1 below.
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0002** lb/ton	13,961,250 tons/year	1.2978	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00003** lb/ton	13,961,250 tons	0.1947	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		1.59731E-05	
Arsenic Compounds					0.001200		1.55738E-05	
Beryllium Compounds					0.000100		1.29781E-06	
Cadmium Compounds					0.000050		6.48907E-07	
Chromium Compounds					0.014577		0.000189181	
Cobalt Compounds					0.000623		8.08638E-06	
Lead Compounds					0.003000		3.89344E-05	
Manganese Compounds					0.023238		0.000301592	
Mercury Compounds					0.000002		2.39169E-08	
Nickel Compounds					0.001077		1.39765E-05	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0006*	

Notes:
n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.
1. Controlled emission factor average of most recent source test data available two identical units.

ID 201	6/17/2010	**0.0001**
ID 203	12/16/2010	**0.0003**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Start up: 10/17/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 301
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #1 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 301

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0007** lb/ton	5,584,500 tons	1.8466	See #1 Below
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0007** lb/ton	5,584,500 tons	1.8466	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	0.2770	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		2.27275E-05	
Arsenic Compounds					0.001200		2.21593E-05	
Beryllium Compounds					0.000100		1.84661E-06	
Cadmium Compounds					0.000050		9.23304E-07	
Chromium Compounds					0.014577		0.000269179	
Cobalt Compounds					0.000623		1.15058E-05	
Lead Compounds					0.003000		5.53982E-05	
Manganese Compounds					0.023238		0.000429123	
Mercury Compounds					0.000002		3.40303E-08	
Nickel Compounds					0.001077		1.98865E-05	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0008*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available on three identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Source started up on 9/16/09.
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 302
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #2 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 302

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0006** lb/ton	5,584,500 tons/year	1.7144	Source Test: 11/16/11
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0006** lb/ton	5,584,500 tons/year	1.7144	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	0.2572	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		2.11008E-05	
Arsenic Compounds					0.001200		2.05733E-05	
Beryllium Compounds					0.000100		1.71444E-06	
Cadmium Compounds					0.000050		8.57221E-07	
Chromium Compounds					0.014577		0.000249913	
Cobalt Compounds					0.000623		1.06823E-05	
Lead Compounds					0.003000		5.14332E-05	
Manganese Compounds					0.023238		0.00039841	
Mercury Compounds					0.000002		3.15947E-08	
Nickel Compounds					0.001077		1.84632E-05	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0008*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available on three identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started up: 7/16/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 303
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #3 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 303

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)(3)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1.8466	Based on source test data for #2T #4T & #6T - See #1 below.
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1.8466	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	0.2770	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		2.27275E-05	
Arsenic Compounds					0.001200		2.21593E-05	
Beryllium Compounds					0.000100		1.84661E-06	
Cadmium Compounds					0.000050		9.23304E-07	
Chromium Compounds					0.014577		0.000269179	
Cobalt Compounds					0.000623		1.15058E-05	
Lead Compounds					0.003000		5.53982E-05	
Manganese Compounds					0.023238		0.000429123	
Mercury Compounds					0.000002		3.40303E-08	
Nickel Compounds					0.001077		1.98865E-05	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0008*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started up: 6/13/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 304
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #4 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 304

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2), (3)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0004** lb/ton	5,584,500 tons/year	1.1532	Source Test: 11/18/11
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0004** lb/ton	5,584,500 tons/year	1.1532	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	0.1730	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		1.41932E-05	
Arsenic Compounds					0.001200		1.38384E-05	
Beryllium Compounds					0.000100		1.1532E-06	
Cadmium Compounds					0.000050		5.766E-07	
Chromium Compounds					0.014577		0.000168101	
Cobalt Compounds					0.000623		7.18532E-06	
Lead Compounds					0.003000		3.4596E-05	
Manganese Compounds					0.023238		0.000267986	
Mercury Compounds					0.000002		2.12518E-08	
Nickel Compounds					0.001077		1.24191E-05	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0005*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started up: 9/2/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 305
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #5 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 305

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2), (3)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1.8466	Based on source test data for #2T #4T & #6T - See #1 below.
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1.8466	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	0.2770	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		2.27275E-05	
Arsenic Compounds					0.001200		2.21593E-05	
Beryllium Compounds					0.000100		1.84661E-06	
Cadmium Compounds					0.000050		9.23304E-07	
Chromium Compounds					0.014577		0.000269179	
Cobalt Compounds					0.000623		1.15058E-05	
Lead Compounds					0.003000		5.53982E-05	
Manganese Compounds					0.023238		0.000429123	
Mercury Compounds					0.000002		3.40303E-08	
Nickel Compounds					0.001077		1.98865E-05	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0008*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started up: 8/24/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 306
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #6 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 306

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0010** lb/ton	5,584,500 tons/year	2.6722	Source Test: 11/18/11
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0010** lb/ton	5,584,500 tons/year	2.6722	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	0.4008	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		3.28884E-05	
Arsenic Compounds					0.001200		3.20662E-05	
Beryllium Compounds					0.000100		2.67218E-06	
Cadmium Compounds					0.000050		1.33609E-06	
Chromium Compounds					0.014577		0.000389522	
Cobalt Compounds					0.000623		1.66498E-05	
Lead Compounds					0.003000		8.01655E-05	
Manganese Compounds					0.023238		0.000620974	
Mercury Compounds					0.000002		4.92445E-08	
Nickel Compounds					0.001077		2.87774E-05	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0012*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started up: 9/23/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 307
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #7 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 307

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1.8466	Based on source test data for #2T #4T & #6T - See #1 below.
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1.8466	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0001** lb/ton	5,584,500 tons	0.2770	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		2.27275E-05	
Arsenic Compounds					0.001200		2.21593E-05	
Beryllium Compounds					0.000100		1.84661E-06	
Cadmium Compounds					0.000050		9.23304E-07	
Chromium Compounds					0.014577		0.000269179	
Cobalt Compounds					0.000623		1.15058E-05	
Lead Compounds					0.003000		5.53982E-05	
Manganese Compounds					0.023238		0.000429123	
Mercury Compounds					0.000002		3.40303E-08	
Nickel Compounds					0.001077		1.98865E-05	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0008*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started: 9/19/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 308
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #8 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 308

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2), (3)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0002** lb/ton	5,584,500 tons/year	0.5585	Source Test: 11/18/14
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0002** lb/ton	5,584,500 tons/year	0.5585	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00003** lb/ton	5,584,500 tons	0.0838	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		6.87323E-06	
Arsenic Compounds					0.001200		6.7014E-06	
Beryllium Compounds					0.000100		5.5845E-07	
Cadmium Compounds					0.000050		2.79225E-07	
Chromium Compounds					0.014577		8.14048E-05	
Cobalt Compounds					0.000623		3.47957E-06	
Lead Compounds					0.003000		1.67535E-05	
Manganese Compounds					0.023238		0.000129775	
Mercury Compounds					0.000002		1.02914E-08	
Nickel Compounds					0.001077		6.01408E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0003*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 308 11/18/2014 **0.0002**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started: 9/29/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 309
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #9 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 309

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2), (3)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1.8466	Based on source test data for #2T #4T & #6T - See #1 below.
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0007** lb/ton	5,584,500 tons/year	1.8466	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.000099** lb/ton	5,584,500 tons	0.2770	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		2.27275E-05	
Arsenic Compounds					0.001200		2.21593E-05	
Beryllium Compounds					0.000100		1.84661E-06	
Cadmium Compounds					0.000050		9.23304E-07	
Chromium Compounds					0.014577		0.000269179	
Cobalt Compounds					0.000623		1.15058E-05	
Lead Compounds					0.003000		5.53982E-05	
Manganese Compounds					0.023238		0.000429123	
Mercury Compounds					0.000002		3.40303E-08	
Nickel Compounds					0.001077		1.98865E-05	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0008*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 302	11/16/2011	**0.0006**
ID 304	11/18/2011	**0.0004**
ID 306	11/14/2011	**0.0010**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started: 10/20/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 310
SCC: 3-03-024-02/03

Operation description:

Tertiary Crushing: #10 Tertiary Crushing Line. This part of the operation is exhausted by a FARR Cartridge-Type Dust Collector

OPERATION 207, PROCESS 496, SOURCE 310

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2), (3)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0002** lb/ton	5,584,500 tons/year	0.5585	Source Test: 11/18/14
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0002** lb/ton	5,584,500 tons/year	0.5585	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.0000** lb/ton	5,584,500 tons	0.0838	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		6.87323E-06	
Arsenic Compounds					0.001200		6.7014E-06	
Beryllium Compounds					0.000100		5.5845E-07	
Cadmium Compounds					0.000050		2.79225E-07	
Chromium Compounds					0.014577		8.14048E-05	
Cobalt Compounds					0.000623		3.47957E-06	
Lead Compounds					0.003000		1.67535E-05	
Manganese Compounds					0.023238		0.000129775	
Mercury Compounds					0.000002		1.02914E-08	
Nickel Compounds					0.001077		6.01408E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0003*	

Notes:

n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.

1. Controlled emission factor average of most recent source test data available two identical units.

ID 308 11/18/2014 **0.0002**

2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started: 10/27/11
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 311
SCC: 3-03-024-02/03

Operation description:

Sierrita fine crushing operations - 8D/8B CTP
This part of operations is exhausted by FARR Cartridge-Style Dust Collector on North side of fine crushing building.
OPERATION 207, PROCESS , SOURCE 311

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2), (3)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0002** lb/ton	5,584,500 tons/year	0.5585	Source Test 10/11/12
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0002** lb/ton	5,584,500 tons/year	0.5585	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.00003** lb/ton	5,584,500 tons	0.0838	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		6.87323E-06	
Arsenic Compounds					0.001200		6.7014E-06	
Beryllium Compounds					0.000100		5.5845E-07	
Cadmium Compounds					0.000050		2.79225E-07	
Chromium Compounds					0.014577		8.14048E-05	
Cobalt Compounds					0.000623		3.47957E-06	
Lead Compounds					0.003000		1.67535E-05	
Manganese Compounds					0.023238		0.000129775	
Mercury Compounds					0.000002		1.02914E-08	
Nickel Compounds					0.001077		6.01408E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0003*	

Notes:
n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.
2. PTE calculated based on total possible run time assuming 24/7 operation.
3. Unit installed and started: 5/24/12
4. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
5. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B
6. Throughput: 5/24/12 - 12/31/12

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA FINE CRUSHING OPERATIONS
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK : S 312
SCC: 3-03-024-02/03

Operation description:

Sierrita fine crushing operations - fine ore transfer tower.
This part of operations is exhausted by 1 FARR Cartridge-Style Dust Collector on West side of fine crushing building.
OPERATION 207, PROCESS 419, SOURCE 312

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control	Control Effy	U/C Emission Cntr. Emission Factor (1)	Max. Annual Throughput (2), (3)	Potential Emissions tons/yr	Remarks
Particulate Matter (PM)	Non-Fugitive Point Source	FARR Cartridge-Type Dust Collector	Water sprays on	n/c	-- **0.0002** lb/ton	5,584,500 tons/year	0.4188	Based on Permit emission limit
PM-10	Non-Fugitive Point Source		material transfer	n/c	-- **0.0002** lb/ton	5,584,500 tons/year	0.4188	assume PM10 = PM
PM-2.5	Non-Fugitive Point Source			n/c	-- **0.000023** lb/ton	5,584,500 tons	0.0628	AP-42 App B, B.2.2
Sulfur Dioxide (not anticipated)	--	--	--	--	--	--	--	--
Carbon Monoxide (not anticipated)	--	--	--	--	--	--	--	--
Nitrogen Oxides (NOx) (not anticipated)	--	--	--	--	--	--	--	--
Non-Methane VOC (not anticipated)	--	--	--	--	--	--	--	--
HAPs								
Hazardous Air Pollutants found in Particulate Matter:								
Antimony Compounds					0.001231		5.15492E-06	
Arsenic Compounds					0.001200		5.02605E-06	
Beryllium Compounds					0.000100		4.18838E-07	
Cadmium Compounds					0.000050		2.09419E-07	
Chromium Compounds					0.014577		6.10536E-05	
Cobalt Compounds					0.000623		2.60968E-06	
Lead Compounds					0.003000		1.25651E-05	
Manganese Compounds					0.023238		9.73314E-05	
Mercury Compounds					0.000002		7.71858E-09	
Nickel Compounds					0.001077		4.51056E-06	
Selenium Compounds					0.000000		0	
					(%)			
Total HAPs							*0.0002*	

Notes:
n/c : Since the emission estimates are based on source test results, control efficiencies not incorporated.
1. Controlled emission factor based on Permit limit for ID 312
2. PTE calculated based on total possible run time assuming 24/7 operation.
3. HAPs - Pb from memorandum from Charles Brunett: Ore Metals Content, 6/25/03 (TRI RY 2002 Files). All others from Dan Aiken, Geologist Actlabs - Skyline 8/18/97 Analysis (TRI RY 2002 Files)
4. PM 2.5 calculated as 15% of PM, as per Table B.2.2 of AP-42 Appendix B
5. Installed 10/18/12
6. Throughput: 10/18/12 - 12/31/12

ESTIMATED AIR POLLUTANT EMISSIONS FROM SIERRITA PAX USE
FREEPORT-MCMORAN SIERRITA INC., GREEN VALLEY AZ PLANT

2012

STACK :

Operation description:
Potassium Amyl Xanthate (PAX) use in Milling.

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	U/C Emission Cntr. Emission Factor (1)	Max. Annual PAX Use	Actual Annual PAX Use	Potential Emissions tons/yr	Emissions tons/yr	Remarks
HAPs				582	1,103.51			CS2 = PAX/day * 0.01 * 3 * ratio (CS2/PAX) * 365
Carbon Disulfide			**4.1305** lb CS2-days	lbs PAX/day	lbs PAX/day		2.2790	1% loss per day, average hold time is 3 days. EF = 0.01 * ratio CS2/PAX *3 * 365

Notes:
1. Source added to Emission Inventory in 2010 (Reporting Year 2009). PAX Use restarted in the Sierrita Mill in Jan 2009.
2. Emission Calculation:

Total PAX (lbs)	Time Period (days)	Daily Rate (lbs/day)	PAX Lost per day (lbs/day)	Ratio of CS2 to PAX	CS2 Equivalent (lbs/day)	CS2 Equivalent (lbs/year)
403,883.00	366	1103.505464	11.03505464	0.376185771	4.151230537	4558.051129

Molecular Weight	
CS2	76.14
PAX	202.4

3. Emission Factor above is presented to make the final calculation easier to see:
EF = 0.01 * 3 * 0.376185771 * time period = 4.1192 lb CS2-day (2009)
4. A decomposition rate of 1% per day is assumed for PAX according to manufacturers data as well as average water temperature.
5. Average hold times of PAX in mixing tanks is up to three days.
6. PAX weight in pounds refers to dry PAX, not mixed solution used.
7. In order to account for loss of PAX per day, the Process input for calculation shall be in lbs/day
8. MAX Annual PAX use based on 0.005 lb PAX/ton ore @ 42,591,120 tpy crusher throughput

Evaporative Emissions From Gasoline Dispensing Operations [1]

Maximum Throughput = 400000 gallons

Pollutant	Fugitive/ Point Source	Primary Air Pollution Control	Secondary Air Pollution Control
Non-Methane VOC	Fugitive Source Stage I controls (no Stage II)	Balanced Submerged Filling [4]	N/C
Total HAPs [5]			

[1] Factors are for VOC as well as total organic emissions. Methane and ethane content of gasoline evaporative emissions is negligible.

[2] Emission factor includes EPA AP-42 emission factors in lb/1000 gal from balanced submerged filling, underground tank breathing and empt and spillage (0.3 + 1 + 11 + 0.7) = 13 lb/1000 gal.

[3] Includes any vapor loss between underground tank and gas pump.

[4] Balanced submerged filling returns displaced vapors from the underground tank to the tank truck compartments being emptied.

[5] HAPs contained in gasoline conservatively assumed to be 10.8 % of VOC emissions. Value is the average of 16.35 % of VOC emissions wi non-MTBE/ non-ethanol containing fuel. Fuel delivered during winter months may be oxygenated with either one. MTBE emits more HAPs. Marketing (Stage I and Stage II) document revised January 2001. Prepared for EPA by the Eastern Research Group, Inc.

Control Effy	Cntr. Emission Factor (2)	Maximum Throughput	Potential Emissions tons/yr	Remarks
95.50%	**13.0000** lb/1000 gal	400,000	2.6000	Maximum throughput based on current usage rates. AP-42 Section 5.2, Table 5.2-7 See Note #2.
95.50%			0.2808	

:ying[3], displacement losses from vehicle fueling

ith MTBE containing fuel and 5.25% of VOC emissions with
HAPs emission factors obtained from Gasoline