

AIR MONITORING AT CARLTON FORGE WORKS

December 2014

Background

Carlton Forge Works (CFW) manufactures forged high-temperature alloy rings for aerospace, gas turbine, and other industries, using principal alloy metals such as nickel, titanium, aluminum, cobalt, zirconium, niobium, and iron, as well as other high temperature metals with special properties. CFW operates a large grinding room with 25 grinding booths, each equipped with a handheld air grinder or a swing grinder and vented to one of three air pollution control equipment (baghouses). The facility is located in a mixed residential/industrial area of Paramount CA and is surrounded by public areas and private residences.

Complaints of burning metallic odors reported by local community members led the South Coast Air Quality Management District (SCAQMD) to supplement ongoing complaint investigation, inspections and surveillance activities with preliminary air sampling in February, April and May of 2013. In August 2013, based on the preliminary air sampling results, SCAQMD began ambient field measurements near CFW to further investigate potential health impacts from exposure to gaseous and particulate pollutants emitted by CFW operations. Because the major activities at CFW are forging, abrasive blasting, coating, and grinding, particular attention was given to the monitoring of the metallic components of particle emissions to better characterize the emissions and determine ambient levels of potential exposure off-site and in the community.

Methods

Various collection methods were used to gather samples of air and materials. The sampling locations for all types of samples collected during this study are shown in Figure 1.

Air sampling

- Ambient air sampling
Ambient air samples were collected east of CFW at three nearby locations on Vermont and California Avenue, using ambient particle samplers running on a typical 1-in-3 day schedule. These ambient concentration data provide the most relevant information in terms of potential off-site exposure during the sampling period to airborne toxic pollutants.
- Summa canister “grab” sampling
Summa canisters provided by SCAQMD were used by a complainant to collect gaseous (i.e. Volatile Organic Compounds or VOCs) air samples immediately outside of the facility gate, downwind of the facility.
- Source testing
A source test was performed according to California Air Resources Board (CARB) Method 436 (Determination of Multiple Metal Emissions from Stationary Sources) to determine the metal emissions at the three baghouse exhausts, and the concentrations of metals at a roof vent of the grinding area. The purpose of source test sample analysis is to determine the composition and rate of material emitted from the facility in order to compare it to samples taken in the community. Source test results, however, do not measure actual public exposure.

Material sampling

- Wipe sampling
Wipe samples of dust and fines from metal grinding operations were taken from near the top of the exhaust stack venting the southernmost baghouse, the rooftop of the grinding room, the rooftop of the saw building located east of the grinding room, near the top of the exhaust stack venting the centermost baghouse, and near the top of the exhaust stack venting the northernmost baghouse in accordance with ASTM E1728-03 (Standard Practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination).
- Glass plate deposition sampling
Glass plate deposition samples were collected from the rooftop of the CFW facility and within the nearby community east (downwind) of CFW. Some of these samples were taken directly across the street, on Vermont Avenue, and also about 1000 feet east of CFW and close to Lincoln Elementary School. The sampling locations were selected to provide information about the possible distribution of pollutants in the community. Although deposition plate results cannot determine ambient concentrations or approximate human exposure, they provide a good indication of gradients and the extent of potential off-site impacts.
- Bulk sampling
Bulk samples were taken from dust collected in each of CFW's three baghouses for analysis. All samples were analyzed for a variety of elements, including Arsenic (As), Cadmium (Cd), Chromium (Cr), Iron (Fe), Manganese (Mn), Molybdenum (Mo), Nickel (Ni), Lead (Pb), Titanium (Ti), Vanadium (V), and Zinc (Zn). The purpose of bulk sample analysis is to determine the composition of solid material collected inside the facility in order to compare it to samples taken in the community.

Results

The bulk samples collected from the three baghouses indicate that Ni, Cr, Fe, Ti and Zn are the most abundant metals produced from the grinding process (Table 1a). The wipe sample from the roof of the grinding room had the highest concentrations of all measured metals (with the exception of Zn) (Table 1b). Source test results confirm that emissions from the grinding area were enriched in these trace elements (Table 2). The emission rates from the baghouse exhaust indicated relatively low emission rates of metals from these stacks. However, the testing performed at the open roof vent suggests a higher rate of uncontrolled fugitive emissions. The glass plate deposition samples revealed a distinct gradient for several metals; in particular, the highest average levels of Ni, Co, Cr, and Mo were measured closest to CFW and decreased gradually with increasing distance from the facility (Table 3).

The ambient concentrations of Ni, Cr, Mo, and Cd (and to a lesser degree Co) exceeded their corresponding average levels recorded in the South Coast Air Basin between 2012 and 2013 during the fourth Multiple Air Toxics Exposure Study (MATES IV; SCAQMD 2014) (see Table 4 - 6 for details). These increased levels may be associated with direct emissions from CFW coupled with re-suspension of dust accumulated on or near the CFW facility. On one sampling day (August 20, 2013), the concentration averaged over 24-hr of Ni measured at one site (downwind of the CFW's grinding room) significantly exceeded the acute (1-hr average) and 8-hr Reference Exposure Levels (RELs), and on three other sampling days (August 26, September 10 and October 31, 2013 and September 26, 2014) it exceeded the 8-hr REL. Longer term monitoring or modeling would be necessary to assess long-term chronic (multi-year) risk; however, the average Ni concentration at the southern site over the 13-month long sampling period (23.7 ng/m^3) was above the Ni chronic REL (14 ng/m^3). The RELs are developed by the California Office of Environmental Health Hazard Assessment, and are designed so that exposure below the relevant REL is not expected to result in adverse non-cancer health effects. It should be noted that if an REL is exceeded, that does not necessarily mean that health effects will occur, but that

additional investigation of sources and potential exposures is warranted. A summary of nickel health effects and development of the RELs can be found at the following link.

http://www.oehha.ca.gov/air/chronic_rels/pdf/032312NiREL_Final.pdf. The RELs were based on laboratory animal studies that found immunologic effects and cellular injury in the lungs and respiratory system with exposures to high levels of nickel.

It should be noted that while the total Cr concentrations exceeded the average MATES IV levels, the toxic fraction of Cr, Hexavalent Chromium (CrVI), was well below the chronic REL.

The measured concentrations of toxic VOCs were within the ambient ranges typically observed throughout the South Coast Air Basin. Acetone, ethane and propane were slightly above background, but these are not considered toxic VOCs and may be associated with natural gas usage from forging oven operations in the CFW facility (Table 7).

Follow-up

Actions taken by SCAQMD

On August 7, 2013, SCAQMD requested that CFW prepare a detailed air toxics inventory report to identify and report all calendar year 2012 air toxic emissions resulting from operation of CFW. Based on the air toxics inventory report, SCAQMD notified CFW on March 21, 2014 that they were required to prepare a detailed Health Risk Assessment (HRA) to analyze and evaluate the health risk to the public due to the emissions from its operations.

On September 27, 2013, SCAQMD informed CFW that the facility is required to file applications with SCAQMD for permits to operate grinding and associated air pollution control equipment. Those permit applications have been submitted to the SCAQMD and are currently being evaluated.

SCAQMD is continuing to collect ambient air samples at two nearby locations and evaluate the results to have a better understanding of long term exposure levels in the community. More recent measurements have shown that ambient concentrations have declined since October 2013.

SCAQMD staff has initiated work to propose to its Governing Board a new rule to reduce fugitive emissions at metal forging, grinding and processing operations.

Actions Taken by CFW

Based on SCAQMD's investigations and discussions with CFW and the facility's independent review of the operation of equipment in its grinding room, CFW has taken the following steps to improve the collection and control efficiency of their air pollution control equipment and to reduce fugitive emissions:

- Moved the grinding operations closer to the associated dust collection devices.
- Increased the air flow through its air pollution control equipment (baghouses).
- Closed the roof vents and isolated the grinding area by installing plastic strip curtains.
- Increasing the frequency and improved the effectiveness of housekeeping practices.
- CFW is also further evaluating structural changes in their grinding operations to improve fugitive dust collection and control, including putting their grinding operation under better negative pressure.
- CFW has hired a consultant and conducted their own source testing and ambient air monitoring to measure metal concentrations in the exhaust of the baghouse and in the surrounding areas.
- SCAQMD required CFW to submit an Air Toxics Inventory Report (ATIR) and a subsequent Health Risk Assessment (HRA). The ATIR was provided on August 6, 2014, a draft HRA was provided on August 18, 2014, and a revised HRA was provided on October 28, 2014. The HRA includes a dispersion modeling

computer analysis and some additional monitoring analysis at locations upwind of the facility. The HRA is undergoing review by SCAQMD staff and will be made available to the public once it has been approved. Depending upon the level of risk identified in the approved HRA, CFW may be required to undergo a public notification process and/or risk reduction pursuant to AB 2588 and SCAQMD Rule 1402. Details regarding the AB2588 program are available online here: <http://www.aqmd.gov/home/regulations/compliance/toxic-hot-spots-ab-2588>

SCAQMD has also shared a copy of this updated summary with the California Department of Toxics Substance Control, the Los Angeles County Department of Public Health Environmental & Safety and the U.S. Environmental Protection Agency.

Figure 1 Aerial map of the sampling area around Carlton Forge Works (CFW) in Paramount, CA



- ★ Wipe sample location (Table 1b)
- ★ Glass plate sample location (Table 3)
- ★ Ambient sample location (Table 4)
- ⊗ VOC sample location (Table 5)

Table 1. Bulk and wipe sample analysis results (Table 1a and 1b, respectively). Bulk sample are either expressed in ppm or % (by weight). Wipe sample analysis results in $\mu\text{g}/\text{ft}^2$. All samples were collected on 2/5/2013.

a)

Sample ID	Sample Location	As (ppm)	Cd (ppm)	Cr (%)	Fe (%)	Mn (ppm)	Ni (%)	Pb (ppm)	Ti (%)	V (%)	Zn (ppm)
Sample #1	Central baghouse's collection barrel	16	<1	8.9	5.2	<1	19.5	<1	14.8	0.6	94
Sample #2	Northern baghouse's collection barrel	10	<1	5.7	4.0	850	11.5	<1	31.4	1.9	480
Sample #3	Southern baghouse's collection barrel	<1	<1	7.7	10.1	900	16.5	<1	17.3	0.9	1,340

b)

Sample ID	Sample Location	As	Cd	Cr	Fe	Mn	Ni	Pb	Ti	V	Zn
Sample #4	Top of south baghouse's exhaust stack	2	0.7	330	8,100	120	1,300	8.2	890	52	15,100
Sample #5	Roof of grinding room	6.4	1.3	800	25,900	190	3,000	68	2,400	210	970
Sample #6	Roof of "Saw" building east of grinding room	4.3	0.6	340	15,900	110	1,200	54	690	68	900
Sample #7	Central baghouse's exhaust stack	0.9	0.1	52	3,900	160	150	3.5	160	9.6	9,300
Sample #8	Top of northern baghouse's exhaust stack	1.6	0.3	250	7,100	75	800	6.6	740	44	7,000

Table 2. Results of source testing for metals collected from a roof vent of the grinding room and from each of the baghouse exhausts. Grinding equipment vented to the baghouse #3 is used to grind a 45-degree edge on metal cylinders prior to drop forging; grinding equipment vented to the baghouses #1 and #2 are used to finish metal parts after forging. Since measurement of flow rates from the roof vent were not possible, corresponding emission rates cannot be not calculated.

	Baghouse 1	Baghouse 2	Baghouse 3	Roof Vent
	Concentration			
	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$
Aluminum	71	51	32	51
Antimony	0.14	0.11	0.10	0.17
Arsenic	0.29	0.30	0.22	1.93
Barium	11.4	10.1	8.4	11.8
Cadmium	2.3	2.0	1.7	2.1
Chromium	2.2	1.6	1.3	3.1
Cobalt	6.3	5.1	4.3	7.1
Copper	10.6	9.0	6.5	9.8
Iron	59	47	39	63
Lead	150	55	46	71
Manganese	47	39	35	43
Nickel	5.9	2.3	1.7	9.4
Phosphorus	11.0	9.8	8.8	11.0
Selenium	0.15	0.09	0.06	0.36
Silver	0.15	0.05	0.06	0.05
Zinc	335	297	251	315
	Emission Rates			
	g/hr	g/hr	g/hr	g/hr
Aluminum	6.3	4.6	2.8	N/A
Antimony	0.01	0.01	0.01	N/A
Arsenic	0.03	0.03	0.02	N/A
Barium	1.02	0.09	0.73	N/A
Cadmium	0.21	0.19	0.15	N/A
Chromium	0.20	0.15	0.11	N/A
Cobalt	0.56	0.46	0.37	N/A
Copper	0.95	0.82	0.57	N/A
Iron	5.28	4.27	3.37	N/A
Lead	13.4	5.0	4.1	N/A
Manganese	4.2	3.6	3.0	N/A
Nickel	0.53	0.21	0.15	N/A
Phosphorus	0.99	0.89	0.77	N/A
Selenium	0.01	0.01	0.01	N/A
Silver	0.01	0.01	0.01	N/A
Zinc	30	27	22	N/A

Table 3. Concentrations of metals at seven monitoring locations around the Carlton Forge Works facility. The metals levels were collected on the glass plate deposition samples. Metals that are shaded indicate levels higher than typical Western U.S. soil and/or levels showing a gradient, decreasing with increased distance from CFW.

Element	Unit	Sample #19	Sample #20	Sample #21	Sample #22	Sample #23	Sample #24	Sample #25	Mean Conc. of Soil in Western U.S. ¹	Range of Conc. of Soil in Western U.S. ²	Gradient observed	Exceeds soil range
		Plate #45-96 1320410-01	Plate #50-96 1320410-02	Plate #A98 1320410-03	Plate #28-95 1320410-04	Plate #79-96 1320410-05	Plate #55-08 1320410-06	Plate #93-96 1320410-07				
Aluminum	%	3.83	2.88	2.36	2.61	2.12	2.03	1.55	5.8	0.5 - >10		
Antimony	ppm	9.61	9.18	10.7	15.3	10.6	5.83	14	0.47	<1 - 2.6	NO	X
Arsenic	ppm	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	5.5	0.10 - 97		
Barium	ppm	356	424	392	621	500	390	491	580	70 - 5000		
Beryllium	ppm	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	1	<1 - 15		
Cadmium	ppm	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	<0.01	<0.01		
Calcium	%	1.55	1.75	1.7	2.09	1.87	1.55	2.04	1.8	0.06 - 32		
Cerium	ppm	36.6	37.5	31.2	49.7	42.9	51.4	41.5	65	<150 - 300		
Cesium	ppm	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	unavailable	unavailable		
Chromium	ppm	622	681	494	385	257	122	90.3	41	3 - 2,000	X	NO
Cobalt	ppm	545	594	582	384	231	73.7	46.2	7	<3 - 50	X	NO
Copper	ppm	2,450	1,820	1,210	1,850	1,740	702	388	21	2 - 300	X	X
Gallium	ppm	19.6	21.3	19.9	29.1	23.8	20.7	22.8	16	<5 - 70		
Germanium	ppm	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	1.2	0.58 - 2.5		
Iron	%	3.43	3.23	2.88	3.79	3.02	3.34	2.69	2.1	0.1 - >10		
Lanthanum	ppm	22	22.3	19.9	30.9	25.7	27.9	26.8	30.0	<30 - 200		
Lead	ppm	103	115	123	166	179	194	131	17	<10 - 700		
Magnesium	%	0.68	0.74	0.67	0.95	0.85	1.16	0.79	0.74	0.03 - >10		
Manganese	ppm	465	457	403	535	438	611	456	380	30 - 5000		
Molybdenum	ppm	327	317	244	165	109	40.8	25.1	1	<3 - 7	X	X
Nickel	ppm	3,230	3,300	2,420	1,310	800	310	12.6	15	<5 - 500	X	X
Potassium	%	0.386	0.427	0.419	0.556	0.524	0.833	0.574	1.8	0.19 - 6.3		
Rubidium	ppm	21.2	24.8	24.9	38.9	33	46.2	33.1	69	<20 - 210		
Selenium	ppm	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	0.23	<0.1 - 4.3		
Silicon	%	1.82	2.42	2.27	3.61	2.95	1.98	2.26	30.0	15 - 44		
Silver	ppm	39.2	8.99	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	unavailable	unavailable		
Sodium	%	0.62	0.905	0.809	0.823	0.952	0.466	0.524	0.97	0.05 - >10		
Strontium	ppm	152	180	161	192	159	137	170	100	10 - 3,000		
Thallium	ppm	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	unavailable	unavailable		
Tin	ppm	28.8	32.9	31	33.2	16.6	17.3	17.5	0.9	<0.1 - 0.74	X	X
Titanium	%	0.68	0.9	0.55	0.44	0.32	0.25	0.14	0.22	0.05 - 2.0	X	NO
Tungsten	ppm	82.6	86.4	56.4	70.1	50.1	17.1	12.1	unavailable	unavailable	X	N/A
Uranium	ppm	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	2.5	0.68 - 7.9		
Vanadium	ppm	400	490	301	227	159	86	54	70	7 - 500	X	NO
Yttrium	ppm	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	ND (<0.01 ppm)	22	<10 - 150		
Zinc	ppm	1,230	1,340	1,600	1,990	1,810	998	1,710	55	10 - 2,100		
Zirconium	ppm	183	173	92.6	82.4	58	22	22.8	160	<20 - 1,500	X	NO

¹: Arithmetic mean reported by U.S. Geological Service

²: Concentration range reported by U.S. Geological Service

Table 4. Concentrations of metals at the southern ambient air monitoring location in August (a), September (b), October (c), November (d), December 2013 (e), January 2014 (f), February (g), March (h), April (i), May (j), June (k), July (l), August (m) and September (n). Available overall average concentrations, standard deviations, Multiple Air Toxics Exposure Study (MATES IV) averages and standard deviations are also provided along with acute, 8-hr average and chronic Reference Exposure Levels (RELs) when available.

a)

Site		Southern site							August	MATES IV	Reference Exposure Level			
Sample Date		8/8/2013	8/11/2013	8/14/2013	8/17/2013	8/20/2013	8/23/2013	8/26/2013	8/29/2013	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	309	239	297	284	588	380	500	430	378	N/A			
Si	ng/m ³	1877	1606	2208	2015	5815	2412	3600	2950	2810	N/A			
P	ng/m ³	37.8	62.3	77.4	85.0	87.6	51.8	57.1	60.6	64.9	N/A			
S	ng/m ³	574	1153	1347	1367	1081	710	730	610	946	N/A			
Cl	ng/m ³	1826	406	300	496	935	1538	2100	980	1073	N/A			
Al	ng/m ³	838	571	819	735	2296	879	1350	1200	1086	N/A			
K	ng/m ³	298	306	356	360	787	417	540	450	439	478.4 ± 508.8			
Ca	ng/m ³	823	588	846	818	2161	1105	1450	1250	1130	1261.1 ± 1258.2			
Ti	ng/m ³	893	80	224	124	1164	200	380	340	426	72.9 ± 75.5			
V	ng/m ³	60.8	2.9	13.8	2.8	62.6	8.2	16.6	16.9	23.1	3.38 ± 3.25			
Cr	ng/m ³	40.3	5.7	59.8	30.4	198.2	32.0	73.3	37.7	59.7	3.79 ± 3.77			
CrVI	ng/m ³	0.65	0.23	0.16	0.17	0.32	0.10	0.31	0.84	0.35	0.056 ± 0.096			200
Mn	ng/m ³	17.3	11.4	18.0	20.0	60.0	21.3	30.7	27.8	25.8	22.4 ± 19.6			
Co	ng/m ³	10.4	2.1	3.5	3.8	46.5	7.5	19.2	9.3	12.8	0.48 ± 0.38			
Ni	ng/m ³	59.6	3.8	19.3	11.7	293.8	36.8	98.5	45.9	71.2	3.75 ± 4.02	200	60	14
Cu	ng/m ³	22.2	11.6	16.9	23.5	40.2	25.9	27.6	31.0	24.9	36.2 ± 34.8	100000		
Zn	ng/m ³	41.4	24.6	33.9	40.4	168.1	66.5	82.6	75.0	66.6	67.5 ± 55.6			
Ga	ng/m ³	0.8	0.8	3.5	ND	1.3	1.2	ND	ND	1.5	N/A			
Fe	ng/m ³	989	832	1392	1232	3621	1348	1950	1600	1620	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	0.3	ND	ND	ND	ND	ND	0.3	N/A			
As	ng/m ³	0.4	ND	ND	ND	0.6	ND	ND	ND	0.5	0.55 ± 0.43	200	15	15
Mo	ng/m ³	15.5	2.3	28.3	84.3	77.5	20.7	33.5	25.7	36.0	1.87 ± 1.77			
Sr	ng/m ³	10.2	8.6	13.8	14.2	33.7	14.4	17.5	16.2	16.1	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	15.1	21.3	21.4	16.2	16.6	15.9	18.5	15.8	17.6	N/A			
Rb	ng/m ³	0.2	0.8	ND	ND	4.4	1.5	ND	ND	1.7	1.31 ± 1.02			
Y	ng/m ³	1.2	0.8	2.1	0.7	5.3	1.5	ND	ND	1.9	N/A			
Nb	ng/m ³	7.1	0.8	4.1	2.8	34.5	2.9	ND	ND	8.7	N/A			
Pd	ng/m ³	5.2	3.2	2.8	5.2	2.9	3.5	ND	ND	3.8	N/A			
Ag	ng/m ³	2.5	2.5	3.5	0.7	0.2	1.2	ND	ND	1.7	N/A			
Cd	ng/m ³	2.9	5.1	8.3	7.6	3.0	3.3	ND	ND	5.0	0.15 ± 0.33			20
In	ng/m ³	4.6	5.3	7.9	5.2	6.1	3.5	ND	ND	5.4	N/A			
Sn	ng/m ³	10.0	7.4	13.8	11.7	16.0	7.9	ND	13.1	11.4	5.54 ± 23.50			
Sb	ng/m ³	14.4	11.0	15.5	12.1	15.6	13.4	ND	ND	13.7	4.31 ± 3.54			
Cs	ng/m ³	11.1	21.5	56.7	72.2	25.9	14.8	ND	30.1	33.2	0.075 ± 0.069			
Ba	ng/m ³	46.4	30.8	48.7	63.2	106.3	51.6	65.1	68.8	60.1	54.4 ± 41.9			
La	ng/m ³	11.3	ND	6.6	26.9	ND	ND	ND	ND	14.9	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	5.6	4.4	6.6	9.0	15.8	8.2	7.2	ND	8.1	6.21 ± 5.27			
Bi	ng/m ³	0.6	ND	ND	ND	0.6	ND	ND	5.3	2.2	N/A			
U	ng/m ³	1.0	0.6	2.8	4.5	0.4	0.6	ND	ND	1.6	0.057 ± 0.064			
Sm	ng/m ³	34.1	28.6	85.7	65.0	32.6	32.0	ND	ND	46.3	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	4.2	5.0	21.1	21.1	8.8	4.4	ND	ND	10.7	N/A			
Ce	ng/m ³	9.0	15.6	46.6	5.5	11.4	10.2	ND	ND	16.4	N/A			
Gd	ng/m ³	35.1	25.7	45.9	121.6	63.6	12.8	ND	ND	50.8	N/A			
Zr	ng/m ³	21.1	8.2	18.3	12.8	78.8	24.2	53.9	19.2	29.6	N/A			

b)

Site		Southern site								September	MATES IV	Reference Exposure Level		
Sample	Date	9/1/2013	9/4/2013	9/10/2013	9/13/2013	9/19/2013	9/22/2013	9/25/2013	9/28/2013	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	160	500	460	370	440	340	470	410	394	N/A			
Si	ng/m ³	930	3250	4350	2650	3200	1750	3300	3650	2885	N/A			
P	ng/m ³	29.3	57.3	82.3	59.4	68.4	38.8	45.5	61.3	55.3	N/A			
S	ng/m ³	430	720	1100	740	1000	530	670	390	697	N/A			
Cl	ng/m ³	140	2150	560	460	300	2250	3350	400	1201	N/A			
Al	ng/m ³	340	1200	1550	970	1200	650	1100	1350	1045	N/A			
K	ng/m ³	180	490	620	440	530	360	498	660	472	478.4 ± 508.8			
Ca	ng/m ³	360	1200	1700	1150	1250	840	950	1450	1113	1261.1 ± 1258.2			
Ti	ng/m ³	58	250	400	300	180	83	220	170	208	72.9 ± 75.5			
V	ng/m ³	ND	13.7	14.7	12.8	5.3	ND	8.6	ND	11.0	3.38 ± 3.25			
Cr	ng/m ³	9.4	39.2	94.5	27.2	16.0	3.2	14.0	8.6	26.5	3.79 ± 3.77			
CrVI	ng/m ³	0.04	0.24	0.83	0.12	0.16	0.11	0.37	0.08	0.24	0.056 ± 0.096			200
Mn	ng/m ³	5.8	25.7	42.3	26.1	29.0	16.0	22.7	46.0	26.7	22.4 ± 19.6			
Co	ng/m ³	ND	8.2	26.1	7.6	6.5	1.7	3.8	4.4	8.3	0.48 ± 0.38			
Ni	ng/m ³	15.5	37.9	130.0	26.9	13.0	2.3	15.4	6.5	30.9	3.75 ± 4.02	200	60	14
Cu	ng/m ³	5.2	26.1	27.8	30.1	18.0	12.0	13.1	38.3	21.3	36.2 ± 34.8	100000		
Zn	ng/m ³	16.7	88.4	130.1	67.2	60.0	33.0	37.7	60.0	61.6	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	450	1600	2500	1550	1650	890	1244	2050	1492	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	16.6	31.3	13.5	3.2	ND	ND	3.4	13.6	1.87 ± 1.77			
Sr	ng/m ³	5.0	17.1	21.3	13.9	16.0	9.3	15.8	18.1	14.6	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	5.9	39.8	14.1	15.0	16.0	16.0	23.6	20.8	18.9	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	11.4	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	ND	65.5	74.1	68.2	70.0	41.0	30.1	88.4	62.5	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	9.0	ND	ND	ND	ND	ND	9.0	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	ND	18.0	37.7	18.1	17.0	ND	32.2	17.9	23.5	N/A			

c)

Site		Southern site											October	MATES IV	Reference Exposure Level			
Sample Date		10/1/2013	10/4/2013	10/7/2013	10/10/2013	10/13/2013	10/16/2013	10/17/2013	10/19/2013	10/22/2013	10/25/2013	10/28/2013	10/31/2013	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	420	1200	610	510	670	510	510	450	370	400	420	540	551	N/A			
Si	ng/m ³	2950	8400	3800	1700	2950	3900	3900	3000	2100	2650	800	4050	3350	N/A			
P	ng/m ³	50.1	330.0	190.0	140.0	220.0	190.0	190.0	180.0	160.0	190.0	92.5	180.0	176.1	N/A			
S	ng/m ³	740	1000	860	980	1300	870	870	1100	1750	1650	620	600	1028	N/A			
Cl	ng/m ³	1600	720	1400	4150	3200	400	400	810	1150	1100	4550	670	1679	N/A			
Al	ng/m ³	1100	3400	1700	790	1250	1600	1600	1200	960	1100	600	1650	1413	N/A			
K	ng/m ³	530	1350	670	360	620	600	600	570	370	430	200	600	575	478.4 ± 508.8			
Ca	ng/m ³	1150	3650	1650	880	1100	2000	2000	1500	910	1200	490	1950	1540	1261.1 ± 1258.2			
Ti	ng/m ³	210	430	650	110	160	350	350	170	220	160	80	340	269	72.9 ± 75.5			
V	ng/m ³	5.3	5.3	33.6	1.7	1.0	11.3	11.3	2.1	8.9	ND	4.8	6.7	8.4	3.38 ± 3.25			
Cr	ng/m ³	33.5	18.1	31.7	19.6	6.7	35.8	35.8	10.4	39.8	28.6	35.8	56.0	29.3	3.79 ± 3.77			
CrVI	ng/m ³	0.07	0.24	0.10	0.10	0.07	0.36	0.36	0.06	0.06	0.06	0.85	0.25	0.22	0.056 ± 0.096			200
Mn	ng/m ³	30.0	91.6	45.6	18.1	33.3	75.1	75.1	34.3	28.8	31.8	13.3	68.7	45.5	22.4 ± 19.6			
Co	ng/m ³	7.0	11.2	9.0	ND	5.3	8.2	8.2	4.0	3.0	5.9	3.6	12.6	7.1	0.48 ± 0.38			
Ni	ng/m ³	47.6	15.8	34.8	17.9	8.6	26.3	26.3	7.5	20.9	30.3	28.9	64.2	27.4	3.75 ± 4.02	200	60	14
Cu	ng/m ³	24.9	37.3	47.5	23.8	11.0	59.8	59.8	51.6	31.2	29.9	12.6	52.9	36.9	36.2 ± 34.8	100000		
Zn	ng/m ³	66.5	86.3	85.6	54.3	40.9	120.0	120.0	82.8	46.5	65.7	37.3	122.6	77.4	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	1700	4400	2400	1150	1650	2700	2700	1990	1350	1650	600	2800	2091	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	6.7	4.0	17.4	11.2	ND	30.1	30.1	4.0	50.7	33.3	13.7	14.1	19.6	1.87 ± 1.77			
Sr	ng/m ³	15.8	44.6	23.5	13.1	16.4	22.4	22.4	18.0	13.1	14.1	7.0	24.9	19.6	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	20.6	9.0	10.5	12.0	10.3	8.0	8.1	16.3	13.7	16.8	15.8	10.5	12.6	N/A			
Rb	ng/m ³	ND	7.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.8	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	9.6	9.6	ND	ND	ND	11.4	ND	10.2	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	11.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11.4	5.54 ± 23.50			
Sb	ng/m ³	ND	ND	ND	ND	ND	18.4	18.4	28.6	ND	ND	ND	20.0	21.3	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	68.0	130.0	100.0	53.3	53.1	120.0	120.0	102.4	55.4	69.9	27.4	110.0	84.1	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	12.0	9.2	6.3	11.8	12.8	12.8	10.4	8.8	6.9	ND	12.9	10.4	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	69.9	ND	61.7	62.6	66.3	66.3	ND	ND	ND	80.7	ND	67.9	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	29.9	ND	ND	ND	ND	ND	ND	ND	ND	32.0	ND	ND	30.9	N/A			

d)

Site		Southern site										November	MATES IV	Reference Exposure Level		
Sample	Date	11/3/2013	11/6/2013	11/9/2013	11/12/2013	11/15/2013	11/18/2013	11/21/2013	11/24/2013	11/27/2013	11/30/2013	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	310	450	280	670	640	420	91	120	150	470	360	N/A			
Si	ng/m ³	1050	3700	1850	5150	2400	1750	440	1000	1450	2100	2089	N/A			
P	ng/m ³	92.1	149.5	100.0	260.0	160.0	120.0	41.7	64.1	62.6	140.0	119.0	N/A			
S	ng/m ³	800	420	720	1000	1100	870	290	190	210	680	628	N/A			
Cl	ng/m ³	2150	380	450	1050	5350	2400	780	120	98	3850	1663	N/A			
Al	ng/m ³	460	1450	740	2150	1050	800	320	390	590	880	883	N/A			
K	ng/m ³	250	530	340	830	500	370	89	230	230	410	378	478.4 ± 508.8			
Ca	ng/m ³	500	1650	830	2750	1100	850	280	500	710	1000	1017	1261.1 ± 1258.2			
Ti	ng/m ³	55	230	110	540	170	120	88	430	120	150	201	72.9 ± 75.5			
V	ng/m ³	ND	ND	ND	17.3	ND	ND	ND	ND	ND	ND	17.3	3.38 ± 3.25			
Cr	ng/m ³	ND	28.3	5.6	54.5	32.3	34.9	16.4	ND	29.9	11.7	26.7	3.79 ± 3.77			
CrVI	ng/m ³	0.02	0.41	0.07	0.56	0.04	0.56	0.56	0.06	0.14	0.27	0.27	0.056 ± 0.096			200
Mn	ng/m ³	8.8	58.3	21.2	88.1	27.7	21.1	6.7	10.6	22.3	65.1	33.0	22.4 ± 19.6			
Co	ng/m ³	ND	5.0	ND	13.2	5.7	3.1	ND	ND	12.9	4.2	7.4	0.48 ± 0.38			
Ni	ng/m ³	2.5	20.1	5.4	39.5	35.2	13.6	12.2	ND	58.4	11.7	22.1	3.75 ± 4.02	200	60	14
Cu	ng/m ³	15.0	59.3	28.9	120.0	21.4	36.1	15.5	26.2	34.0	56.0	41.2	36.2 ± 34.8	100000		
Zn	ng/m ³	23.0	99.2	50.2	219.8	63.5	48.0	33.8	42.9	48.9	83.5	71.3	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	540	2450	1150	4100	1500	1300	450	770	1150	1800	1521	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	22.2	ND	34.2	ND	47.2	8.8	ND	ND	9.0	24.3	1.87 ± 1.77			
Sr	ng/m ³	7.5	18.4	9.8	32.4	19.5	13.4	5.2	7.7	7.9	17.1	13.9	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	9.8	7.3	10.6	18.6	20.8	14.8	4.8	5.0	ND	17.7	12.2	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	ND	22.2	ND	25.5	ND	ND	ND	ND	ND	20.4	22.7	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	ND	110.0	52.9	192.9	68.5	67.8	ND	43.7	83.9	86.1	88.2	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	12.8	ND	24.6	6.9	ND	ND	ND	ND	8.5	13.2	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	ND	36.3	15.4	59.3	28.9	15.5	15.1	13.5	17.9	30.4	25.8	N/A			

e)

Site		Southern site										December	MATES IV	Reference Exposure Level		
Sample Date		12/3/2013	12/6/2013	12/9/2013	12/12/2013	12/15/2013	12/18/2013	12/21/2013	12/24/2013	12/27/2013	12/30/2013	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	150	370	1000	330	330	440	280	310	510	490	421	N/A			
Si	ng/m ³	1100	2150	7550	2700	2800	2600	1450	2500	4250	3700	3080	N/A			
P	ng/m ³	79.1	110.0	400.0	130.0	130.0	140.0	95.0	120.0	190.0	170.0	156.4	N/A			
S	ng/m ³	350	490	510	410	340	790	500	410	530	451	478	N/A			
Cl	ng/m ³	340	1830	910	280	280	1450	1600	600	690	680	866	N/A			
Al	ng/m ³	470	890	3100	1080	1080	1250	600	990	1700	1550	1271	N/A			
K	ng/m ³	270	400	1250	440	500	450	360	610	690	640	561	478.4 ± 508.8			
Ca	ng/m ³	530	960	3250	1250	1140	1400	640	1250	2100	1800	1432	1261.1 ± 1258.2			
Ti	ng/m ³	85	160	430	190	160	250	120	140	250	190	198	72.9 ± 75.5			
V	ng/m ³	ND	ND	8.3	ND	ND	6.0	ND	ND	ND	ND	7.1	3.38 ± 3.25			
Cr	ng/m ³	17.1	14.0	25.2	17.8	5.4	33.5	4.4	7.1	25.0	12.9	16.2	3.79 ± 3.77			
CrVI	ng/m ³	0.12	INV	0.22	0.23	0.09	0.08	0.02	INV	0.19	0.12	0.13	0.056 ± 0.096			200
Mn	ng/m ³	14.4	26.1	90.3	34.7	42.5	30.2	14.2	35.8	83.9	44.1	41.6	22.4 ± 19.6			
Co	ng/m ³	3.1	3.6	7.5	4.6	5.6	4.0	ND	4.2	6.7	5.4	5.0	0.48 ± 0.38			
Ni	ng/m ³	22.1	15.4	11.9	11.9	7.9	24.8	5.9	6.7	16.7	27.4	15.1	3.75 ± 4.02	200	60	14
Cu	ng/m ³	34.5	48.9	53.7	67.0	66.6	44.5	44.7	54.1	77.6	63.5	55.5	36.2 ± 34.8	100000		
Zn	ng/m ³	49.7	100.0	109.9	97.1	93.0	120.0	56.0	82.4	119.7	91.9	92.0	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	910	1500	4550	1900	1950	1850	1100	1850	3200	2400	2121	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	ND	9.8	10.9	ND	16.0	ND	ND	ND	ND	12.2	1.87 ± 1.77			
Sr	ng/m ³	10.2	15.7	43.1	15.9	17.3	20.4	9.0	18.0	27.5	23.4	20.1	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	8.8	12.7	10.0	10.0	6.4	12.7	16.5	9.1	7.1	8.6	10.2	N/A			
Rb	ng/m ³	ND	ND	6.9	ND	6.9	1.31 ± 1.02									
Y	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	ND	25.3	ND	18.2	21.7	18.1	18.2	22.5	19.1	22.4	20.7	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	70.4	75.4	200.0	170.0	120.0	110.0	64.5	110.0	140.0	120.0	118.0	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	6.1	14.0	8.6	6.9	7.5	7.1	12.9	15.0	10.4	9.8	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	14.2	28.4	32.7	24.9	27.3	34.1	15.5	21.4	48.9	23.2	27.1	N/A			

f)

Site		Southern site								January	MATES IV	Reference Exposure Level		
Sample	Date	1/5/2014	1/8/2014	1/14/2014	1/17/2014	1/20/2014	1/23/2014	1/26/2014	1/29/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	550	510	560	580	440	340	280	290	444	N/A			
Si	ng/m ³	3900	3800	5050	4400	4250	2500	1900	2200	3500	N/A			
P	ng/m ³	160.0	190.0	240.1	280.0	220.0	160.0	110.0	130.0	186.3	N/A			
S	ng/m ³	500	660	420	470	560	630	550	890	585	N/A			
Cl	ng/m ³	1000	500	460	530	310	130	1060	1600	699	N/A			
Al	ng/m ³	1550	1700	1950	1850	1750	1000	990	960	1469	N/A			
K	ng/m ³	830	830	800	1150	820	460	410	410	714	478.4 ± 508.8			
Ca	ng/m ³	1550	1900	2750	3400	2800	1200	980	1100	1960	1261.1 ± 1258.2			
Ti	ng/m ³	180	430	310	250	290	160	220	170	251	72.9 ± 75.5			
V	ng/m ³	ND	15.2	ND	ND	5.8	ND	ND	ND	10.5	3.38 ± 3.25			
Cr	ng/m ³	5.0	36.0	39.0	37.0	44.3	10.2	19.4	30.6	27.7	3.79 ± 3.77			
CrVI	ng/m ³	0.08	0.27	0.76	0.35	0.26	0.11	0.01	0.30	0.27	0.056 ± 0.096			200
Mn	ng/m ³	38.8	55.8	75.4	65.6	75.0	28.9	16.9	26.2	47.8	22.4 ± 19.6			
Co	ng/m ³	4.2	11.2	9.2	6.9	8.3	4.2	ND	3.9	6.8	0.48 ± 0.38			
Ni	ng/m ³	3.6	30.8	20.5	15.8	28.8	7.5	6.5	21.9	16.9	3.75 ± 4.02	200	60	14
Cu	ng/m ³	53.9	78.7	89.2	73.2	78.9	34.5	37.6	30.2	59.5	36.2 ± 34.8	100000		
Zn	ng/m ³	70.2	170.0	120.0	150.0	170.0	65.8	50.1	64.1	107.5	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	2200	2850	3450	2750	3000	1450	1150	1550	2300	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	10.6	37.6	13.5	28.0	ND	ND	13.5	20.6	1.87 ± 1.77			
Sr	ng/m ³	51.4	27.1	28.4	30.0	30.9	15.2	13.4	17.1	26.7	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	24.9	18.1	6.1	11.6	15.7	16.0	16.3	16.4	15.6	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	15.5	ND	14.8	ND	ND	ND	15.2	5.54 ± 23.50			
Sb	ng/m ³	57.2	27.3	22.8	25.4	25.9	ND	25.5	ND	30.7	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	110.0	170.0	190.0	170.0	220.0	56.8	73.7	61.0	131.4	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	21.9	19.8	12.9	16.4	16.9	9.2	ND	ND	16.2	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	na	na	na	na	na	na	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	21.5	44.7	40.7	55.1	54.7	25.0	15.7	16.8	34.3	N/A			

g)

Site		Southern site										February	MATES IV	Reference Exposure Level		
Sample Date		2/1/2014	2/4/2014	2/7/2014	2/10/2014	2/13/2014	2/16/2014	2/19/2014	2/22/2014	2/25/2014	2/28/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	230	250	130	260	370	230	320	280	300	290	266	N/A			
Si	ng/m ³	2000	1350	1129	1320	3250	920	1650	2600	2000	300	1652	N/A			
P	ng/m ³	96.7	73.7	56.4	80.8	140.0	81.4	140.0	110.0	110.2	53.2	94.2	N/A			
S	ng/m ³	280	270	260	350	500	550	1050	500	760	250	477	N/A			
Cl	ng/m ³	860	1600	620	1950	820	1350	2100	331	447	4062	1414	N/A			
Al	ng/m ³	830	550	610	560	1250	360	760	1000	780	230	693	N/A			
K	ng/m ³	410	270	210	270	560	230	350	460	350	120	323	478.4 ± 508.8			
Ca	ng/m ³	1000	670	530	670	1650	470	870	1050	860	240	801	1261.1 ± 1258.2			
Ti	ng/m ³	500	95	110	120	240	60	220	140	120	59	166	72.9 ± 75.5			
V	ng/m ³	ND	ND	ND	6.3	ND	ND	9.0	ND	ND	ND	7.7	3.38 ± 3.25			
Cr	ng/m ³	23.6	12.5	48.5	11.5	35.9	ND	31.3	8.1	5.2	10.0	20.7	3.79 ± 3.77			
CrVI	ng/m ³	0.29	0.11	0.12	0.14	0.41	0.04	0.40	0.09	0.09	0.15	0.19	0.056 ± 0.096			200
Mn	ng/m ³	19.8	14.6	15.6	12.3	48.0	7.7	15.5	26.2	17.1	4.6	18.1	22.4 ± 19.6			
Co	ng/m ³	3.6	ND	4.0	ND	5.9	ND	5.4	3.1	3.3	ND	4.2	0.48 ± 0.38			
Ni	ng/m ³	12.5	6.9	16.2	12.5	18.6	4.0	31.9	9.0	9.4	15.7	13.7	3.75 ± 4.02	200	60	14
Cu	ng/m ³	27.1	24.2	25.8	24.8	64.7	20.8	30.7	29.5	17.3	10.9	27.6	36.2 ± 34.8	100000		
Zn	ng/m ³	69.1	46.4	52.6	59.7	139.1	37.0	51.8	57.2	46.3	48.9	60.8	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	1350	920	990	960	2450	690	1050	1400	1050	450	1131	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	13.0	ND	8.5	7.3	28.0	ND	26.3	ND	ND	ND	16.6	1.87 ± 1.77			
Sr	ng/m ³	12.3	12.1	6.2	11.3	23.0	8.1	12.9	15.8	11.1	23.0	12.5	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	5.4	8.8	6.5	8.8	11.3	8.9	16.7	11.7	5.2	9.6	9.3	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	17.1	ND	ND	ND	26.1	ND	ND	ND	ND	ND	21.6	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	70.6	55.3	46.8	62.4	120.0	43.7	52.6	44.7	ND	ND	62.0	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	ND	ND	11.3	ND	ND	ND	ND	ND	11.3	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	na	na	na	na	na	na	na	na	na	na	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	16.7	20.7	16.2	15.2	39.1	7.7	15.7	13.7	17.8	14.4	17.7	N/A			

h)

Site		Southern site										March	MATES IV	Reference Exposure Level		
Sample Date		3/3/2014	3/6/2014	3/9/2014	3/12/2014	3/15/2014	3/18/2014	3/21/2014	3/24/2014	3/27/2014	3/30/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	280	450	200	520	440	760	160	470	510	410	420	N/A			
Si	ng/m ³	1250	2250	1600	2550	2400	2650	780	1750	1350	1200	1778	N/A			
P	ng/m ³	86.2	130.0	73.5	150.0	120.0	170.0	31.5	140.0	120.0	96.1	112	N/A			
S	ng/m ³	340	620	180	610	600	730	200	1150	610	370	541	N/A			
Cl	ng/m ³	2213	3502	662	3310	1550	8950	660	2750	6150	5200	3495	N/A			
Al	ng/m ³	560	930	600	1050	930	1150	310	820	720	570	764	N/A			
K	ng/m ³	260	420	290	490	490	570	130	350	320	270	359	478.4 ± 508.8			
Ca	ng/m ³	590	1000	720	1300	1250	1450	330	850	750	620	886	1261.1 ± 1258.2			
Ti	ng/m ³	110	200	86	150	150	160	58	120	210	84	133	72.9 ± 75.5			
V	ng/m ³	ND	6.3	ND	ND	ND	6.1	ND	ND	7.9	ND	7	3.38 ± 3.25			
Cr	ng/m ³	42.9	32.2	4.4	8.3	14.2	14.0	8.4	24.6	27.1	8.9	19	3.79 ± 3.77			
CrVI	ng/m ³	1.11	0.15	0.16	0.03	0.05	0.06	0.05	0.52	0.85	0.14	0	0.056 ± 0.096			200
Mn	ng/m ³	17.7	27.4	15.0	32.0	25.0	24.4	5.6	13.9	13.4	7.9	18	22.4 ± 19.6			
Co	ng/m ³	5.8	11.5	ND	3.8	6.0	4.8	ND	3.1	3.8	ND	6	0.48 ± 0.38			
Ni	ng/m ³	34.6	41.5	7.1	16.9	24.4	17.7	14.2	18.1	24.4	14.2	21	3.75 ± 4.02	200	60	14
Cu	ng/m ³	30.0	26.9	23.5	22.1	28.5	15.2	10.7	18.5	24.6	7.1	21	36.2 ± 34.8	100000		
Zn	ng/m ³	47.2	73.9	38.5	81.2	55.1	49.5	54.3	41.0	61.4	27.5	53	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	1050	1450	900	1450	1450	1350	400	950	910	650	1056	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	51.8	7.7	ND	ND	5.6	ND	ND	10.4	19.4	ND	19	1.87 ± 1.77			
Sr	ng/m ³	9.4	16.7	9.4	17.5	19.6	22.6	5.0	12.7	14.4	12.1	14	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	9.6	41.1	4.4	8.6	9.8	22.6	ND	15.8	11.3	15.4	15	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	ND	ND	ND	ND	17.5	ND	ND	ND	ND	ND	18	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	ND	ND	ND	44.3	69.1	49.3	ND	38.9	46.1	ND	50	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	22.3	ND	22	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	17.9	29.9	14.2	25.5	17.3	23.0	10.9	11.7	26.9	ND	20	N/A			

i)

Site		Southern Site										April	MATES IV	Reference Exposure Level		
Sample Date		4/2/2014	4/5/2014	4/8/2014	4/11/2014	4/14/2014	4/17/2014	4/20/2014	4/23/2014	4/26/2014	4/29/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	280	360	370	320	450	670	N/A	620	440	730	471	N/A			
Si	ng/m ³	620	970	2950	1950	2400	2000	N/A	2800	960	5500	2239	N/A			
P	ng/m ³	57.4	87.6	160.0	130.0	150.0	180.0	N/A	170.0	110.0	280.0	147	N/A			
S	ng/m ³	260	510	800	1100	990	1300	N/A	790	470	680	767	N/A			
Cl	ng/m ³	3350	3800	700	700	1350	7000	N/A	6200	6750	2800	3628	N/A			
Al	ng/m ³	360	440	1250	820	970	950	N/A	1150	580	2200	969	N/A			
K	ng/m ³	140	240	470	320	430	450	N/A	510	240	900	411	478.4 ± 508.8			
Ca	ng/m ³	320	500	1350	900	1250	900	N/A	1150	480	2700	1061	1261.1 ± 1258.2			
Ti	ng/m ³	130	64	230	160	160	130	N/A	130	78	300	154	72.9 ± 75.5			
V	ng/m ³	8.1	ND	7.9	5.7	ND	ND	N/A	ND	ND	ND	7	3.38 ± 3.25			
Cr	ng/m ³	27.1	5.6	48.2	24.4	28.6	8.7	N/A	15.5	14.5	58.1	26	3.79 ± 3.77			
CrVI	ng/m ³	1.19	0.05	0.67	0.21	0.56	0.05	0.10	0.23	2.04	0.58	1	0.056 ± 0.096			200
Mn	ng/m ³	5.6	13.7	34.4	21.6	28.1	19.7	N/A	29.4	9.2	71.8	26	22.4 ± 19.6			
Co	ng/m ³	ND	ND	4.9	4.9	4.4	ND	N/A	ND	ND	8.5	6	0.48 ± 0.38			
Ni	ng/m ³	23.4	5.6	29.7	25.7	17.6	8.7	N/A	13.2	11.1	20.5	17	3.75 ± 4.02	200	60	14
Cu	ng/m ³	10.4	4.7	56.5	25.0	22.2	11.7	N/A	13.0	4.4	43.4	21	36.2 ± 34.8	100000		
Zn	ng/m ³	20.7	30.8	87.0	67.9	42.1	64.1	N/A	48.2	17.4	90.4	52	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
Fe	ng/m ³	510	580	1900	1150	1350	930	N/A	1300	470	3300	1277	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	54.1	ND	59.8	28.7	31.7	ND	N/A	5.7	11.9	9.5	29	1.87 ± 1.77			
Sr	ng/m ³	6.3	7.9	18.9	13.4	16.5	15.3	N/A	17.4	8.2	33.4	15	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	9.4	10.3	9.5	5.3	7.2	9.8	N/A	14.9	14.9	8.3	10	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	4.6	5	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	ND	ND	75.5	ND	45.7	ND	N/A	ND	ND	94.0	72	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	8.9	ND	ND	ND	N/A	ND	ND	8.1	8	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
U	ng/m ³	na	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A	ND	ND	ND	ND	N/A			
Zr	ng/m ³	14.8	7.9	27.0	18.9	14.2	26.7	N/A	13.0	ND	27.2	19	N/A			

j)

Site		Southern Site									May	MATES IV	Reference Exposure Level		
Sample Date		5/2/2014	5/5/2014	5/8/2014	5/11/2014	5/14/2014	5/17/2014	5/20/2014	5/23/2014	5/26/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	570	530	590	800	490	620	440	400	280	524	N/A			
Si	ng/m ³	5300	1600	1650	3250	3900	2150	1650	2800	1450	2639	N/A			
P	ng/m ³	230.0	130.0	140.0	190.0	150.0	170.0	120.0	140.0	110.0	153	N/A			
S	ng/m ³	740	770	950	680	490	1650	560	960	1100	878	N/A			
Cl	ng/m ³	940	5050	5950	8300	940	3100	5600	1250	360	3499	N/A			
Al	ng/m ³	2200	720	780	1400	1600	920	850	1150	610	1137	N/A			
K	ng/m ³	860	320	360	620	590	520	300	450	280	478	478.4 ± 508.8			
Ca	ng/m ³	2700	750	790	1450	1700	920	710	1100	560	1187	1261.1 ± 1258.2			
Ti	ng/m ³	370	86	100	150	190	120	150	200	65	159	72.9 ± 75.5			
V	ng/m ³	12.4	ND	ND	ND	ND	5.9	ND	7.3	ND	9	3.38 ± 3.25			
Cr	ng/m ³	36.7	13.1	15.1	14.3	12.2	4.6	42.8	38.0	ND	22	3.79 ± 3.77			
CrVI	ng/m ³	0.21	0.43	INV	0.35	0.36	0.02	1.12	ND	0.18	0	0.056 ± 0.096			200
Mn	ng/m ³	57.8	15.2	17.6	30.7	36.7	19.0	19.0	30.0	15.0	27	22.4 ± 19.6			
Co	ng/m ³	7.5	ND	3.6	4.6	4.6	ND	6.6	8.8	ND	6	0.48 ± 0.38			
Ni	ng/m ³	43.6	13.5	15.9	12.3	13.2	13.0	41.0	49.0	3.9	23	3.75 ± 4.02	200	60	14
Cu	ng/m ³	54.9	4.8	5.2	13.5	32.7	5.0	4.8	15.0	ND	17	36.2 ± 34.8	100000		
Zn	ng/m ³	110.0	28.7	28.9	38.2	60.2	29.0	31.0	58.0	22.0	45	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	2950	680	830	1400	1850	910	930	1600	700	1317	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	8.8	ND	14.7	ND	7.6	ND	33.0	15.0	ND	16	1.87 ± 1.77			
Sr	ng/m ³	27.7	9.5	11.7	22.0	18.2	13.0	12.0	22.0	8.3	16	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	10.7	6.8	9.6	18.5	5.9	14.0	15.0	5.2	7.3	10	N/A			
Rb	ng/m ³	4.4	ND	ND	ND	ND	ND	ND	ND	ND	4	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	110.0	ND	ND	ND	68.0	ND	ND	ND	ND	89	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	8.8	ND	ND	ND	ND	ND	ND	ND	ND	9	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	31.7	20.4	7.8	9.3	13.6	9.9	17.9	21.2	ND	16	N/A			

k)

Site		Southern site										June	MATES IV	Reference Exposure Level		
Sample Date		6/1/2014	6/4/2014	6/7/2014	6/10/2014	6/13/2014	6/16/2014	6/19/2014	6/22/2014	6/25/2014	6/28/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	370	400	360	380	370	350	420	340	400	400	379	N/A			
Si	ng/m ³	1200	1800	1600	1800	2200	1500	1900	1300	2100	1900	1730	N/A			
P	ng/m ³	43.0	47.4	54.6	40.9	62.9	52.7	49.5	60.0	63.7	49.6	52	N/A			
S	ng/m ³	650	600	780	600	770	780	700	890	870	770	741	N/A			
Cl	ng/m ³	4000	2500	2000	310	180	3900	2800	2000	1100	2300	2109	N/A			
Al	ng/m ³	520	780	670	750	920	650	800	550	870	800	731	N/A			
K	ng/m ³	320	370	370	320	390	320	390	310	430	610	383	478.4 ± 508.8			
Ca	ng/m ³	540	880	730	870	990	680	900	540	880	790	780	1261.1 ± 1258.2			
Ti	ng/m ³	62	150	100	99	180	100	140	73	140	170	121	72.9 ± 75.5			
V	ng/m ³	3.1	5.5	5.2	2.9	7.8	4.2	7.3	6.4	4.8	5.0	5.2	3.38 ± 3.25			
Cr	ng/m ³	9.8	25.4	7.7	8.2	30.4	20.6	86.8	6.6	14.5	6.6	21.7	3.79 ± 3.77			
CrVI	ng/m ³	0.36	0.44	0.01	0.03	0.24	0.22	1.07	0.03	0.08	0.02	0.25	0.056 ± 0.096			200
Mn	ng/m ³	11.2	20.6	14.5	15.7	18.5	12.5	19.7	10.4	18.9	17.4	15.9	22.4 ± 19.6			
Co	ng/m ³	ND	6.1	ND	3.4	ND	7.3	5.5	ND	3.4	3.3	4.9	0.48 ± 0.38			
Ni	ng/m ³	8.7	23.7	6.4	13.0	35.6	34.5	34.0	5.8	11.5	9.1	18.2	3.75 ± 4.02	200	60	14
Cu	ng/m ³	4.4	11.5	5.8	8.0	11.9	2.5	22.9	3.5	10.7	12.2	9.3	36.2 ± 34.8	100000		
Zn	ng/m ³	21.6	48.0	29.3	32.1	50.1	29.1	34.0	19.5	39.6	29.9	33	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	620	1100	880	920	1200	770	1400	620	1100	980	959	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	6.4	11.9	ND	ND	14.1	22.8	55.1	ND	ND	ND	22	1.87 ± 1.77			
Sr	ng/m ³	8.3	10.3	8.9	10.1	11.1	10.2	11.7	7.3	12.8	19.3	11.0	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	10.0	7.1	7.1	6.1	6.7	6.8	7.3	6.2	7.5	9.1	7.4	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	ND	21.2	ND	ND	19.5	17.7	ND	ND	17.8	ND	19.1	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	39.0	ND	39	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	ND	17.6	ND	15.3	ND	ND	9.6	ND	18.7	ND	15.3	N/A			

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Site		Southern site										July	MATES IV	Reference Exposure Level		
Sample Date		7/4/2014	7/7/2014	7/10/2014	7/13/2014	7/16/2014	7/19/2014	7/22/2014	7/25/2014	7/28/2014	7/31/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	800	400	240	360	290	190	320	510	330	400	384	N/A			
Si	ng/m ³	1000	2000	1600	1700	1600	1200	1700	2000	1800	1900	1650	N/A			
P	ng/m ³	88.3	58.3	50.9	39.0	51.0	46.1	36.1	50.5	53.4	46.5	52	N/A			
S	ng/m ³	1900	790	650	580	630	560	420	730	670	630	756	N/A			
Cl	ng/m ³	2700	3000	730	3200	410	800	2900	5500	1100	2500	2284	N/A			
Al	ng/m ³	930	870	700	670	890	500	750	850	780	860	780	N/A			
K	ng/m ³	5600	450	270	360	280	230	320	430	350	370	866	478.4 ± 508.8			
Ca	ng/m ³	450	980	680	670	730	530	740	1100	910	940	773	1261.1 ± 1258.2			
Ti	ng/m ³	94	160	170	80	140	76	260	170	160	140	145	72.9 ± 75.5			
V	ng/m ³	3.6	7.3	8.0	4.1	7.1	4.2	13.1	8.2	6.2	5.4	6.7	3.38 ± 3.25			
Cr	ng/m ³	13.4	27.8	32.3	7.3	37.3	11.9	23.6	11.7	33.8	31.6	23.1	3.79 ± 3.77			
CrVI	ng/m ³	0.73	0.29	0.13	0.05	0.27	0.34	0.41	0.05	0.96	0.34	0.36	0.056 ± 0.096			200
Mn	ng/m ³	17.8	27.4	16.4	12.3	17.8	9.9	18.8	18.2	21.8	18.1	17.9	22.4 ± 19.6			
Co	ng/m ³	ND	6.8	4.6	3.5	9.2	ND	3.8	4.0	6.4	4.1	5.3	0.48 ± 0.38			
Ni	ng/m ³	6.7	22.2	22.4	7.7	30.6	13.2	20.7	14.5	25.9	16.6	18.0	3.75 ± 4.02	200	60	14
Cu	ng/m ³	250.0	14.7	9.8	11.0	8.4	5.4	12.3	8.4	12.2	10.2	34.2	36.2 ± 34.8	100000		
Zn	ng/m ³	68.6	45.7	32.5	27.0	33.6	23.9	34.2	42.8	39.5	46.9	39.5	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	560	1200	900	840	960	970	1000	1000	1100	1100	963	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	12.7	16.3	ND	29.8	6.9	94.6	ND	26.8	13.9	28.7	1.87 ± 1.77			
Sr	ng/m ³	150.0	16.2	7.1	11.4	8.4	7.8	12.7	13.4	12.3	12.0	25.1	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	9.6	9.1	6.7	9.5	6.9	ND	9.6	9.4	10.2	10.6	9.1	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	18.2	ND	ND	19.9	19.7	17.6	ND	ND	ND	ND	18.8	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	670.0	41.5	39.6	45.9	ND	ND	ND	38.6	43.6	43.8	132	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	7.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.8	6.21 ± 5.27			
Bi	ng/m ³	14.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	14.0	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	ND	17.0	28.5	ND	12.0	ND	ND	9.8	17.7	ND	17.0	N/A			

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Site		Southern site										August	MATES IV	Reference Exposure Level		
Sample Date		8/3/2014	8/6/2014	8/9/2014	8/12/2014	8/15/2014	8/18/2014	8/21/2014	8/24/2014	8/27/2014	8/30/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	190	190	250	390	350	430	200	150	340	380	287	N/A			
Si	ng/m ³	880	1100	1550	2200	2450	2000	1150	780	2100	1850	1606	N/A			
P	ng/m ³	54.0	38.0	70.0	51.0	53.0	46.0	38.0	38.0	50.0	52.0	49	N/A			
S	ng/m ³	680	520	840	610	600	620	450	500	570	670	606	N/A			
Cl	ng/m ³	950	750	220	1600	790	2600	690	780	1200	1300	1088	N/A			
Al	ng/m ³	360	470	660	950	1050	860	520	320	900	770	686	N/A			
K	ng/m ³	220	200	300	400	410	400	220	170	390	360	307	478.4 ± 508.8			
Ca	ng/m ³	480	480	650	1050	1150	1000	560	370	1050	790	758	1261.1 ± 1258.2			
Ti	ng/m ³	57	110	110	220	200	140	130	51	190	98	131	72.9 ± 75.5			
V	ng/m ³	ND	5.9	ND	5.8	5.2	5.6	6.3	ND	7.8	ND	6.1	3.38 ± 3.25			
Cr	ng/m ³	5.4	15.0	9.7	27.0	35.0	24.0	26.0	6.0	23.0	8.6	18.0	3.79 ± 3.77			
CrVI	ng/m ³	0.01	0.19	0.04	0.24	0.31	0.22	0.78	0.08	0.29	0.05	0.22	0.056 ± 0.096			200
Mn	ng/m ³	8.9	12.0	19.0	22.0	24.0	21.0	12.0	7.7	26.0	17.0	17.0	22.4 ± 19.6			
Co	ng/m ³	ND	3.2	4.4	9.3	11.0	4.6	4.4	ND	3.4	4.2	5.6	0.48 ± 0.38			
Ni	ng/m ³	5.6	10.0	12.0	36.0	48.0	15.0	22.0	6.2	17.0	6.9	17.9	3.75 ± 4.02	200	60	14
Cu	ng/m ³	14.0	3.8	10.0	12.0	26.0	14.0	13.0	3.3	20.0	14.0	13.0	36.2 ± 34.8	100000		
Zn	ng/m ³	23.0	27.0	36.0	55.0	60.0	45.0	35.0	18.0	56.0	40.0	39.5	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	550	700	930	1450	1600	1200	720	450	1400	1100	1010	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	ND	ND	ND	7.1	8.3	34.0	ND	11.0	ND	15.1	1.87 ± 1.77			
Sr	ng/m ³	9.1	5.5	7.6	15.0	18.0	13.0	6.1	ND	12.0	13.0	11.0	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	12.0	8.4	13.0	12.0	10.0	14.0	7.1	8.1	15.0	15.0	11.5	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	16.0	18.0	16.0	ND	ND	18.0	20.0	18.0	23.0	ND	18.4	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	ND	ND	ND	ND	66.0	51.0	ND	ND	63.0	55.0	59	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	ND	13.0	ND	27.0	13.0	11.0	ND	13.0	21.0	ND	16.3	N/A			

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Site		Southern site										September	MATES IV	Reference Exposure Level		
Sample Date		9/2/2014	9/5/2014	9/8/2014	9/11/2014	9/14/2014	9/17/2014	9/20/2014	9/23/2014	9/26/2014	9/29/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	470	360	340	370	480	570	210	360	520	380	406	N/A			
Si	ng/m ³	1900	1700	1350	2100	2450	3500	940	2250	3250	2000	2144	N/A			
P	ng/m ³	53.0	60.0	41.0	54.0	60.0	54.0	32.0	54.0	36.0	42.0	49	N/A			
S	ng/m ³	760	750	550	600	700	600	440	630	460	480	597	N/A			
Cl	ng/m ³	4050	1550	2500	1950	2500	3900	1350	1350	3900	2600	2565	N/A			
Al	ng/m ³	870	770	580	920	1050	1500	390	980	1350	830	924	N/A			
K	ng/m ³	380	340	330	390	540	620	210	380	530	390	411	478.4 ± 508.8			
Ca	ng/m ³	950	920	830	1200	1100	1650	470	1100	1300	970	1049	1261.1 ± 1258.2			
Ti	ng/m ³	150	130	110	170	140	280	70	150	230	170	160	72.9 ± 75.5			
V	ng/m ³	6.0	5.9	ND	6.4	ND	9.3	ND	ND	8.4	6.0	7.0	3.38 ± 3.25			
Cr	ng/m ³	20.0	39.0	14.0	26.0	13.0	39.0	6.9	28.0	47.0	38.0	27.1	3.79 ± 3.77			
CrVI	ng/m ³	0.58	0.44	0.10	0.89	0.03	0.70	0.09	0.41	0.14	0.57	0.40	0.056 ± 0.096			200
Mn	ng/m ³	20.0	19.0	17.0	26.0	22.0	35.0	8.6	28.0	29.0	20.0	22.5	22.4 ± 19.6			
Co	ng/m ³	4.6	7.1	3.6	6.6	4.0	8.6	1.9	8.7	14.0	6.6	6.6	0.48 ± 0.38			
Ni	ng/m ³	22.0	33.0	17.0	24.0	10.0	33.0	11.0	25.0	67.0	27.0	26.9	3.75 ± 4.02	200	60	14
Cu	ng/m ³	7.9	15.0	14.0	23.0	28.0	39.0	5.9	25.0	19.0	19.0	19.6	36.2 ± 34.8	100000		
Zn	ng/m ³	38.0	46.0	38.0	57.0	48.0	79.0	28.0	90.0	71.0	48.0	54	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	1140	1140	890	1370	1430	2100	560	1500	1800	1300	1323	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	15.0	30.0	7.3	57.0	ND	41.0	ND	17.0	20.0	37.0	28.0	1.87 ± 1.77			
Sr	ng/m ³	14.0	12.0	12.0	17.0	16.0	21.0	7.1	16.0	19.0	13.0	14.7	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	13.0	13.0	16.0	15.0	20.0	16.0	7.6	13.0	10.0	12.0	13.6	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	16.0	ND	ND	16.0	16.0	16.0	19.0	ND	ND	17.0	16.7	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	ND	ND	34.0	59.0	67.0	83.0	ND	57.0	59.0	49.0	58	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	ND	ND	ND	9.3	ND	9.6	ND	ND	9.5	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	30.0	25.0	14.0	26.0	28.0	49.0	ND	37.0	44.0	40.0	32.6	N/A			

Table 5. Concentrations of metals at the northern ambient air monitoring location in August (a), September and October (b), east and downwind of the Carlton Forge Works facility (this location was no longer available to SCAQMD for sampling as of October 4, 2013, and was replaced with a new site east of CFW as of October 31, 2013). Available overall average concentrations, standard deviations, Multiple Air Toxics Exposure Study (MATES IV) averages and standard deviations are also provided along with acute, 8-hr average and chronic Reference Exposure Levels (RELs) when available.

a)

Site		Northern site										August	MATES IV	Reference Exposure Level		
Sample Date		8/2/2013	8/6/2013	8/8/2013	8/11/2013	8/14/2013	8/17/2013	8/20/2013	8/23/2013	8/26/2013	8/29/2013	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	397	210	281	258	309	253	282	403	520	340	325	N/A			
Si	ng/m ³	1885	1207	1503	1604	2473	1965	1750	2188	2300	2100	1898	N/A			
P	ng/m ³	64.6	83.6	40.1	66.3	80.9	72.2	76.7	54.2	48.7	47.0	63.4	N/A			
S	ng/m ³	1304	666	632	1378	1267	1206	1080	797	850	660	984	N/A			
Cl	ng/m ³	875	357	1920	392	354	499	707	1739	2550	1050	1044	N/A			
Al	ng/m ³	722	511	551	547	1006	726	654	838	900	780	724	N/A			
K	ng/m ³	379	219	281	307	394	341	297	404	410	330	336	478.4 ± 508.8			
Ca	ng/m ³	825	521	656	532	1075	818	699	966	1100	910	810	1261.1 ± 1258.2			
Ti	ng/m ³	139	126	161	72	752	139	140	131	120	160	194	72.9 ± 75.5			
V	ng/m ³	3.8	7.3	12.8	2.8	43.3	3.6	9.0	7.6	ND	7.9	10.9	3.38 ± 3.25			
Cr	ng/m ³	12.1	24.9	113.0	5.2	25.2	14.1	117.8	37.7	30.4	28.0	40.8	3.79 ± 3.77			
CrVI	ng/m ³	0.04	0.48	0.90	0.08	0.34	0.59	1.43	0.23	0.34	0.29	0.47	0.056 ± 0.096			200
Mn	ng/m ³	14.9	9.7	20.0	15.5	24.0	17.1	14.2	21.1	21.8	25.6	18.4	22.4 ± 19.6			
Co	ng/m ³	3.1	5.2	5.2	2.4	5.9	6.1	7.9	6.2	ND	ND	5.3	0.48 ± 0.38			
Ni	ng/m ³	8.6	20.0	28.3	4.8	25.2	13.3	36.6	15.5	14.5	19.0	18.6	3.75 ± 4.02	200	60	14
Cu	ng/m ³	14.2	15.2	12.4	10.0	16.0	19.4	18.3	26.9	24.2	28.7	18.5	36.2 ± 34.8	100000		
Zn	ng/m ³	32.1	24.2	28.0	20.7	99.7	45.5	27.3	43.9	41.8	37.7	40.1	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	1.7	2.8	ND	0.6	0.3	0.7	ND	ND	1.2	N/A			
Fe	ng/m ³	1041	639	1283	769	1363	1127	1418	1277	1180	1150	1125	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	0.7	ND	ND	0.4	ND	ND	ND	ND	0.5	0.55 ± 0.43	200	15	15
Mo	ng/m ³	3.1	42.1	71.5	3.8	7.8	4.6	77.7	56.7	43.9	66.7	37.8	1.87 ± 1.77			
Sr	ng/m ³	10.4	4.5	9.3	7.6	13.3	9.9	11.1	11.4	10.7	13.5	10.2	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	25.6	11.7	15.2	21.8	21.7	16.2	15.5	22.5	19.3	13.5	18.3	N/A			
Rb	ng/m ³	ND	ND	ND	ND	1.1	1.0	0.7	0.3	ND	ND	0.8	1.31 ± 1.02			
Y	ng/m ³	0.3	1.4	0.0	1.4	1.3	1.3	0.7	1.7	ND	ND	1.0	N/A			
Nb	ng/m ³	6.2	2.8	4.1	6.2	1.3	1.3	13.8	0.7	ND	ND	4.6	N/A			
Pd	ng/m ³	2.4	4.5	3.5	3.8	1.0	2.1	4.1	6.9	ND	ND	3.5	N/A			
Ag	ng/m ³	4.1	2.8	5.5	5.5	1.3	0.4	2.4	1.7	ND	ND	3.0	N/A			
Cd	ng/m ³	8.6	5.9	7.9	9.7	4.0	4.4	12.4	9.0	ND	ND	7.7	0.15 ± 0.33			20
In	ng/m ³	9.3	10.4	0.3	6.9	7.1	6.3	13.1	10.0	ND	ND	7.9	N/A			
Sn	ng/m ³	12.8	12.4	19.0	8.3	11.6	11.8	19.0	16.9	ND	ND	14.0	5.54 ± 23.50			
Sb	ng/m ³	9.3	9.3	ND	ND	10.1	10.1	18.7	19.3	ND	ND	12.8	4.31 ± 3.54			
Cs	ng/m ³	58.0	63.2	20.7	23.5	9.7	13.3	41.1	52.9	61.2	ND	38.2	0.075 ± 0.069			
Ba	ng/m ³	59.4	39.7	68.8	38.3	50.7	54.5	42.8	72.9	80.2	52.5	56.0	54.4 ± 41.9			
La	ng/m ³	9.7	5.5	ND	7.9	13.5	ND	16.9	47.3	ND	ND	16.8	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	2.1	2.8	2.4	ND	ND	ND	7.9	4.5	ND	ND	3.9	N/A			
Pb	ng/m ³	6.6	5.9	6.6	6.2	8.0	4.2	8.3	9.0	ND	ND	6.8	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	1.4	ND	ND	0.6	ND	ND	ND	2.8	1.6	N/A			
U	ng/m ³	3.1	1.4	1.7	2.1	0.8	0.8	1.0	2.4	ND	ND	1.7	0.057 ± 0.064			
Sm	ng/m ³	44.2	67.4	3.8	63.2	33.9	20.9	97.4	39.7	ND	ND	46.3	N/A			
Tl	ng/m ³	ND	1.4	ND	ND	0.2	ND	ND	ND	ND	ND	0.8	N/A			
Te	ng/m ³	4.5	27.3	14.9	16.2	8.2	6.7	10.7	12.1	ND	ND	12.6	N/A			
Ce	ng/m ³	68.4	37.3	7.9	14.5	12.6	5.9	27.3	74.6	30.1	16.2	29.5	N/A			
Gd	ng/m ³	56.0	83.6	40.4	73.9	22.1	27.4	73.9	94.0	ND	ND	58.9	N/A			
Zr	ng/m ³	14.9	148.9	11.1	11.7	26.3	9.7	16.6	16.2	16.9	17.3	29.0	N/A			

b)

Site		Northern site											September	MATES IV	Reference Exposure Level		
Sample Date		9/1/2013	9/4/2013	9/7/2013	9/10/2013	9/13/2013	9/16/2013	9/19/2013	9/22/2013	9/25/2013	9/28/2013	10/1/2013	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	180	560	590	320	460	380	490	360	510	460	440	431	N/A			
Si	ng/m ³	900	3500	2750	1750	3100	1800	3150	1850	2900	4200	2050	2590	N/A			
P	ng/m ³	29.7	67.0	75.0	63.6	70.5	62.0	74.0	36.0	42.1	60.8	45.3	58.1	N/A			
S	ng/m ³	480	800	1050	1150	870	950	1150	590	740	460	820	824	N/A			
Cl	ng/m ³	420	2450	2050	510	700	290	240	2650	3700	540	1900	1355	N/A			
Al	ng/m ³	340	1270	1100	680	1100	660	1200	670	970	1550	780	954	N/A			
K	ng/m ³	180	530	510	290	520	340	520	370	440	750	430	445	478.4 ± 508.8			
Ca	ng/m ³	340	1200	1200	730	1250	740	1100	770	790	1600	820	972	1261.1 ± 1258.2			
Ti	ng/m ³	44	180	140	120	220	130	170	90	180	190	100	146	72.9 ± 75.5			
V	ng/m ³	ND	9.7	ND	6.9	4.1	ND	ND	ND	ND	ND	ND	6.9	3.38 ± 3.25			
Cr	ng/m ³	ND	35.9	22.5	29.7	117.8	56.0	17.0	6.6	12.8	16.9	9.7	35.0	3.79 ± 3.77			
CrVI	ng/m ³	0.06	0.28	0.57	0.10	0.58	0.21	0.06	0.12	0.77	0.06	0.09	0.28	0.056 ± 0.096			200
Mn	ng/m ³	ND	29.4	29.7	22.5	34.5	23.0	23.0	28.0	21.8	48.4	22.1	28.9	22.4 ± 19.6			
Co	ng/m ³	ND	5.5	ND	7.9	ND	ND	5.5	ND	ND	7.6	ND	6.6	0.48 ± 0.38			
Ni	ng/m ³	ND	16.6	11.7	26.3	30.4	12.0	11.0	3.5	10.4	6.6	7.3	14.3	3.75 ± 4.02	200	60	14
Cu	ng/m ³	10.4	27.6	39.4	15.2	40.8	10.0	24.0	13.0	13.1	46.6	16.6	24.0	36.2 ± 34.8	100000		
Zn	ng/m ³	13.1	140.0	45.6	39.4	73.9	25.0	49.0	30.0	28.0	64.3	28.3	50.8	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	410	1600	1400	1000	2250	1100	1450	1000	960	2300	990	1347	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	48.7	25.9	58.4	49.8	16.0	13.0	ND	10.4	ND	ND	31.7	1.87 ± 1.77			
Sr	ng/m ³	ND	17.6	14.9	10.7	16.2	ND	15.0	13.0	ND	22.5	12.8	15.7	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	10.7	78.4	25.9	13.1	17.6	13.0	16.0	19.0	22.1	23.1	19.3	23.9	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	19.7	ND	ND	19.7	ND	ND	ND	ND	27.3	ND	19.7	5.54 ± 23.50			
Sb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.31 ± 3.54			
Cs	ng/m ³	67.0	ND	52.5	54.6	69.8	70.0	51.0	ND	66.3	ND	51.8	61.6	0.075 ± 0.069			
Ba	ng/m ³	ND	51.5	73.2	60.5	100.2	54.0	75.0	54.0	71.5	113.0	82.9	72.5	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	116.1	ND	ND	ND	ND	100.0	ND	ND	ND	ND	ND	108.0	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	37.3	40.4	18.0	30.7	32.8	ND	48.0	31.0	45.9	42.1	20.4	36.3	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	ND	22.8	15.2	25.2	28.0	18.0	14.0	ND	16.9	25.9	15.9	20.8	N/A			

Sampler removed from the site

Table 6. Concentrations of metals at the eastern ambient air monitoring location in October and November (a), December 2013 (b), January 2014 (c), February (d), March (e), April (f), May (g), June (h), July (i), August (j) and September (k). Available overall average concentrations, standard deviations, Multiple Air Toxics Exposure Study (MATES IV) averages and standard deviations are also provided along with acute, 8-hr average and chronic Reference Exposure Levels (RELs) when available.

a)

Site		Eastern site						November	MATES IV	Reference Exposure Level		
Sample Date		10/31/2013	11/6/2013	11/12/2013	11/18/2013	11/24/2013	11/30/2013	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	510	520	780	500	170	220	438	N/A			
Si	ng/m ³	3250	3900	5750	2050	1350	1550	2920	N/A			
P	ng/m ³	160.0	170.0	280.0	140.0	78.8	110.0	155.8	N/A			
S	ng/m ³	610	460	1100	920	230	420	626	N/A			
Cl	ng/m ³	690	510	920	2200	120	460	842	N/A			
Al	ng/m ³	1300	1600	2300	880	540	600	1184	N/A			
K	ng/m ³	640	600	940	430	290	350	522	478.4 ± 508.8			
Ca	ng/m ³	1700	1700	2850	960	590	660	1352	1261.1 ± 1258.2			
Ti	ng/m ³	200	210	360	120	77	90	171	72.9 ± 75.5			
V	ng/m ³	ND	ND	ND	ND	ND	ND	ND	3.38 ± 3.25			
Cr	ng/m ³	14.2	12.4	21.4	12.8	ND	ND	15.5	3.79 ± 3.77			
CrVI	ng/m ³	0.68	0.25	1.01	0.18	0.04	0.11	0.32	0.056 ± 0.096			200
Mn	ng/m ³	130.0	78.8	120.0	32.1	22.5	16.9	54.1	22.4 ± 19.6			
Co	ng/m ³	7.6	ND	9.3	ND	ND	ND	9.3	0.48 ± 0.38			
Ni	ng/m ³	9.7	5.5	10.7	6.9	ND	ND	9.3	3.75 ± 4.02	200	60	14
Cu	ng/m ³	59.7	67.7	130.0	42.8	34.9	46.3	9.3	36.2 ± 34.8	100000		
Zn	ng/m ³	180.0	120.2	270.0	62.9	53.6	60.8	9.3	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	3050	2900	4550	1550	1000	1200	2240	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	ND	ND	16.9	ND	ND	17.0	1.87 ± 1.77			
Sr	ng/m ³	21.9	19.7	36.6	15.5	10.4	11.7	18.8	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	9.7	8.3	18.0	13.5	ND	10.4	12.5	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	ND	ND	39.4	ND	ND	ND	ND	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	140.0	170.0	250.0	90.9	70.8	78.4	132.0	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	27.6	ND	ND	ND	ND	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	31.2	40.4	53.9	ND	ND	18.7	37.7	N/A			

b)

Site		Eastern site					December	MATES IV	Reference Exposure Level		
Sample Date		12/6/2013	12/12/2013	12/18/2013	12/24/2013	12/30/2013	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	430	430	500	130	570	412	N/A			
Si	ng/m ³	3150	2200	2650	930	4150	2620	N/A			
P	ng/m ³	150.0	120.2	150.0	50.0	190.0	130.0	N/A			
S	ng/m ³	500	530	870	130	520	510	N/A			
Cl	ng/m ³	270	1950	1250	180	750	880	N/A			
Al	ng/m ³	1250	870	1150	390	1700	1070	N/A			
K	ng/m ³	530	440	460	260	720	480	478.4 ± 508.8			
Ca	ng/m ³	1450	940	1350	430	1900	1214	1261.1 ± 1258.2			
Ti	ng/m ³	190	110	210	50	220	156	72.9 ± 75.5			
V	ng/m ³	ND	ND	ND	ND	ND	ND	3.38 ± 3.25			
Cr	ng/m ³	11.7	ND	11.1	ND	5.5	9.4	3.79 ± 3.77			
CrVI	ng/m ³	0.08	0.09	0.13	0.08	0.04	0.08	0.056 ± 0.096			200
Mn	ng/m ³	44.9	20.4	29.0	15.5	47.0	31.4	22.4 ± 19.6			
Co	ng/m ³	6.9	ND	ND	ND	6.2	6.6	0.48 ± 0.38			
Ni	ng/m ³	6.9	ND	4.8	ND	4.5	5.4	3.75 ± 4.02	200	60	14
Cu	ng/m ³	83.6	50.8	52.2	20.7	80.2	57.5	36.2 ± 34.8	100000		
Zn	ng/m ³	120.0	75.7	110.0	31.8	110.0	89.5	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	2400	1500	1750	660	2700	1800	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	ND	ND	ND	ND	ND	1.87 ± 1.77			
Sr	ng/m ³	20.4	16.2	19.0	10.0	27.3	18.6	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	11.7	15.9	12.1	ND	8.3	12.0	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	ND	ND	ND	ND	ND	ND	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	160.0	110.0	113.0	78.4	180.7	128.0	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	ND	ND	ND	ND	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	190.0	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	25.6	19.0	23.5	ND	25.9	24.0	N/A			

c)

Site		Eastern site					January	MATES IV	Reference Exposure Level		
Sample Date		1/5/2014	1/11/2014	1/17/2014	1/23/2014	1/29/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	570	590	700	410	400	534	N/A			
Si	ng/m ³	4700	4200	6300	2500	2750	2620	N/A			
P	ng/m ³	170.0	280.0	290.0	160.0	160.0	130.0	N/A			
S	ng/m ³	430	500	490	700	1000	624	N/A			
Cl	ng/m ³	840	600	580	650	1300	794	N/A			
Al	ng/m ³	1800	1700	2450	980	1100	1070	N/A			
K	ng/m ³	980	1100	1000	470	510	480	478.4 ± 508.8			
Ca	ng/m ³	1900	3050	3150	1150	1300	2110	1261.1 ± 1258.2			
Ti	ng/m ³	210	230	340	140	180	220	72.9 ± 75.5			
V	ng/m ³	ND	ND	ND	ND	ND	ND	3.38 ± 3.25			
Cr	ng/m ³	ND	21.4	22.1	ND	16.9	20.2	3.79 ± 3.77			
CrVI	ng/m ³	0.10	0.26	0.16	0.06	0.30	0.18	0.056 ± 0.096			200
Mn	ng/m ³	39.0	66.0	97.1	25.6	29.0	51.3	22.4 ± 19.6			
Co	ng/m ³	ND	ND	10.4	ND	ND	10.4	0.48 ± 0.38			
Ni	ng/m ³	4.5	5.2	10.4	4.5	13.5	7.6	3.75 ± 4.02	200	60	14
Cu	ng/m ³	78.1	89.8	110.0	34.2	60.1	74.4	36.2 ± 34.8	100000		
Zn	ng/m ³	95.4	130.0	150.3	58.4	71.2	101.0	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	2600	2800	4350	1400	1750	1800	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	ND	ND	ND	11.1	ND	1.87 ± 1.77			
Sr	ng/m ³	63.6	27.6	38.0	13.1	19.3	32.3	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	24.9	9.0	7.3	18.7	15.9	15.1	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	45.6	ND	ND	ND	ND	ND	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	160.0	180.0	230.0	80.8	95.7	149.3	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	16.9	14.9	ND	ND	ND	15.9	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	30.1	53.6	52.9	25.2	19.0	36.1	N/A			

d)

Site		Eastern site					February	MATES IV	Reference Exposure Level		
Sample Date		2/4/2014	2/10/2014	2/16/2014	2/22/2014	2/28/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	270	350	350	400	360	346	N/A			
Si	ng/m ³	1050	1350	1400	3200	320	2620	N/A			
P	ng/m ³	64.3	110.0	89.5	140.0	64.0	130.0	N/A			
S	ng/m ³	270	730	370	620	280	454	N/A			
Cl	ng/m ³	1250	1500	1700	160	4500	1822	N/A			
Al	ng/m ³	410	520	570	1250	230	1070	N/A			
K	ng/m ³	230	320	290	570	140	480	478.4 ± 508.8			
Ca	ng/m ³	520	630	660	1250	230	658	1261.1 ± 1258.2			
Ti	ng/m ³	73	72	120	150	26	88	72.9 ± 75.5			
V	ng/m ³	ND	ND	ND	ND	ND	ND	3.38 ± 3.25			
Cr	ng/m ³	ND	ND	ND	ND	ND	ND	3.79 ± 3.77			
CrVI	ng/m ³	0.07	0.12	0.14	0.08	0.08	0.10	0.056 ± 0.096			200
Mn	ng/m ³	12.8	ND	19.0	36.3	ND	22.7	22.4 ± 19.6			
Co	ng/m ³	ND	ND	ND	ND	ND	ND	0.48 ± 0.38			
Ni	ng/m ³	ND	ND	5.5	4.5	5.2	5.1	3.75 ± 4.02	200	60	14
Cu	ng/m ³	24.9	31.4	33.2	38.3	ND	32.0	36.2 ± 34.8	100000		
Zn	ng/m ³	37.7	53.6	53.6	75.7	21.4	48.4	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	820	910	990	1670	250	928	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	ND	ND	ND	ND	ND	1.87 ± 1.77			
Sr	ng/m ³	10.4	10.7	13.8	18.3	ND	13.3	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	ND	12.8	8.6	11.4	10.4	10.8	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	ND	ND	ND	ND	ND	ND	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	ND	86.7	ND	ND	ND	17.4	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	ND	ND	ND	ND	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	ND	12.8	18.3	14.2	ND	15.1	N/A			

e)

Site		Eastern site					March	MATES IV	Reference Exposure Level		
Sample Date		3/6/2014	3/12/2014	3/18/2014	3/24/2014	3/30/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	520	560	1000	600	530	642	N/A			
Si	ng/m ³	1400	2100	2800	1900	1050	1850	N/A			
P	ng/m ³	110.0	130.0	190.0	160.0	110.0	140.0	N/A			
S	ng/m ³	660	650	880	1350	440	796	N/A			
Cl	ng/m ³	3150	3400	9800	2350	5950	4930	N/A			
Al	ng/m ³	580	850	1200	780	510	784	N/A			
K	ng/m ³	320	410	620	400	270	404	478.4 ± 508.8			
Ca	ng/m ³	640	1050	1450	860	500	900	1261.1 ± 1258.2			
Ti	ng/m ³	74	100	130	92	60	91	72.9 ± 75.5			
V	ng/m ³	ND	ND	ND	ND	ND	ND	3.38 ± 3.25			
Cr	ng/m ³	ND	ND	ND	ND	ND	ND	3.79 ± 3.77			
CrVI	ng/m ³	0.0	0.08	0.09	0.03	0.06	0.06	0.056 ± 0.096			200
Mn	ng/m ³	ND	39.0	19.0	10.0	11.4	19.9	22.4 ± 19.6			
Co	ng/m ³	ND	ND	ND	ND	ND	ND	0.48 ± 0.38			
Ni	ng/m ³	4.5	4.5	4.8	ND	ND	4.6	3.75 ± 4.02	200	60	14
Cu	ng/m ³	16.9	17.6	23.1	17.6	6.9	16.4	36.2 ± 34.8	100000		
Zn	ng/m ³	38.3	53.9	53.2	42.8	22.1	42.1	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	710	1200	1350	880	470	922	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	ND	ND	ND	ND	ND	1.87 ± 1.77			
Sr	ng/m ³	12.4	15.2	23.8	15.2	ND	16.7	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	41.1	7.9	22.5	13.1	19.0	20.7	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	ND	ND	ND	ND	ND	ND	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	ND	ND	75.3	ND	ND	75.3	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	ND	ND	ND	ND	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	na	ND	na	na	na	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	ND	13.1	12.8	12.8	ND	12.9	N/A			

f)

Site		Eastern site					April	MATES IV	Reference Exposure Level		
Sample Date		4/5/2014	4/11/2014	4/17/2014	4/23/2014	4/29/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	510	430	N/A	720	810	618	N/A			
Si	ng/m ³	1050	2250	N/A	2650	5300	2813	N/A			
P	ng/m ³	120.0	170.0	N/A	180.0	280.0	187.5	N/A			
S	ng/m ³	650	1350	N/A	910	810	930	N/A			
Cl	ng/m ³	4850	620	N/A	6350	3300	3780	N/A			
Al	ng/m ³	500	940	N/A	1100	2200	1185	N/A			
K	ng/m ³	280	400	N/A	510	860	513	478.4 ± 508.8			
Ca	ng/m ³	560	1050	N/A	1050	2350	1253	1261.1 ± 1258.2			
Ti	ng/m ³	60	120	N/A	120	270	142	72.9 ± 75.5			
V	ng/m ³	ND	ND	N/A	ND	ND	ND	3.38 ± 3.25			
Cr	ng/m ³	ND	8.6	N/A	ND	62.9	ND	3.79 ± 3.77			
CrVI	ng/m ³	0.0	0.03	0.02	0.04	0.60	0.14	0.056 ± 0.096			200
Mn	ng/m ³	9.3	28.7	N/A	26.6	85.3	37.5	22.4 ± 19.6			
Co	ng/m ³	ND	ND	N/A	ND	6.6	ND	0.48 ± 0.38			
Ni	ng/m ³	ND	7.3	N/A	ND	10.0	8.6	3.75 ± 4.02	200	60	14
Cu	ng/m ³	7.6	21.4	N/A	11.4	52.5	23.2	36.2 ± 34.8	100000		
Zn	ng/m ³	35.2	68.8	N/A	51.5	100.0	63.9	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
Fe	ng/m ³	560	1300	N/A	1200	3250	1578	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	N/A	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	10.4	N/A	ND	ND	ND	1.87 ± 1.77			
Sr	ng/m ³	7.9	16.9	N/A	16.9	26.3	17.0	13.25 ± 10.96			
Se	ng/m ³	ND	ND	N/A	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	8.6	ND	N/A	13.8	ND	11.2	N/A			
Rb	ng/m ³	ND	ND	N/A	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	N/A	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	N/A	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	ND	ND	N/A	ND	ND	ND	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	N/A	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	ND	ND	N/A	ND	100.0	100.0	54.4 ± 41.9			
La	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	N/A	ND	ND	ND	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	N/A	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	N/A	ND	ND	ND	N/A			
Zr	ng/m ³	ND	19.0	N/A	ND	24.2	21.6	N/A			

g)

Site		Eastern site					May	MATES IV	Reference Exposure Level		
Sample Date		5/5/2014	5/11/2014	5/17/2014	5/23/2014	5/29/2014	Average	Average \pm SD	Acute	8-Hour	Chronic
Mg	ng/m ³	640	910	750	400	370	614	N/A			
Si	ng/m ³	1650	3100	2200	1850	1800	2120	N/A			
P	ng/m ³	150.0	200.0	200	130.0	56	147.1	N/A			
S	ng/m ³	890	770	1800	1000	850	1062	N/A			
Cl	ng/m ³	5800	8850	3050	850	1000	3910	N/A			
Al	ng/m ³	770	1350	980	750	780	926	N/A			
K	ng/m ³	370	600	540	330	340	436	478.4 \pm 508.8			
Ca	ng/m ³	740	1300	930	760	750	896	1261.1 \pm 1258.2			
Ti	ng/m ³	76	120	98	90	84	94	72.9 \pm 75.5			
V	ng/m ³	ND	ND	ND	ND	ND	ND	3.38 \pm 3.25			
Cr	ng/m ³	ND	ND	ND	ND	9	ND	3.79 \pm 3.77			
CrVI	ng/m ³	0.1	0.03	0.04	0.03	0	0.04	0.056 \pm 0.096			200
Mn	ng/m ³	17.6	27.6	15	16.0	20	19.2	22.4 \pm 19.6			
Co	ng/m ³	ND	ND	ND	ND	ND	ND	0.48 \pm 0.38			
Ni	ng/m ³	ND	ND	ND	ND	ND	ND	3.75 \pm 4.02	200	60	14
Cu	ng/m ³	ND	ND	ND	ND	ND	ND	36.2 \pm 34.8	100000		
Zn	ng/m ³	21.8	30.4	27	38.0	30	29.4	67.5 \pm 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	710	1200	880	930	900	924	1439.7 \pm 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	0.55 \pm 0.43	200	15	15
Mo	ng/m ³	ND	ND	ND	ND	ND	ND	1.87 \pm 1.77			
Sr	ng/m ³	10.4	20.7	16	10.0	12	13.8	13.25 \pm 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	0.82 \pm 0.93			20000
Br	ng/m ³	ND	18.7	13	ND	ND	15.9	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	1.31 \pm 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	0.15 \pm 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	5.54 \pm 23.50			
Sb	ng/m ³	ND	ND	ND	ND	ND	ND	4.31 \pm 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	0.075 \pm 0.069			
Ba	ng/m ³	ND	ND	ND	ND	67	ND	54.4 \pm 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	ND	ND	ND	ND	6.21 \pm 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	0.057 \pm 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	ND	ND	ND	ND	19	ND	N/A			

h)

Site		Eastern site					June	MATES IV	Reference Exposure Level		
Sample Date		6/4/2014	6/10/2014	6/16/2014	6/22/2014	6/28/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	440	200	410	370	390	362	N/A			
Si	ng/m ³	1900	800	1500	1400	1800	1480	N/A			
P	ng/m ³	51.1	48.4	53	66.3	51	54.0	N/A			
S	ng/m ³	720	620	890	1000	840	814	N/A			
Cl	ng/m ³	2900	100	4100	2300	2300	2340	N/A			
Al	ng/m ³	800	350	620	590	740	620	N/A			
K	ng/m ³	390	180	340	340	410	332	478.4 ± 508.8			
Ca	ng/m ³	910	350	670	560	690	636	1261.1 ± 1258.2			
Ti	ng/m ³	130	38	75	57	89	78	72.9 ± 75.5			
V	ng/m ³	ND	ND	ND	ND	ND	ND	3.38 ± 3.25			
Cr	ng/m ³	9.7	ND	ND	ND	ND	9.7	3.79 ± 3.77			
CrVI	ng/m ³	0.1	0.03	0.07	0.01	0	0.03	0.056 ± 0.096			200
Mn	ng/m ³	18.0	ND	15	7.9	18	14.6	22.4 ± 19.6			
Co	ng/m ³	ND	ND	ND	ND	ND	ND	0.48 ± 0.38			
Ni	ng/m ³	7.9	ND	ND	ND	ND	7.9	3.75 ± 4.02	200	60	14
Cu	ng/m ³	12.4	ND	ND	ND	ND	12.4	36.2 ± 34.8	100000		
Zn	ng/m ³	54.2	7.9	27	19.0	23	26.3	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	1100	350	710	630	840	726	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	ND	ND	ND	ND	ND	1.87 ± 1.77			
Sr	ng/m ³	13.5	ND	11	ND	13	12.4	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	9.0	ND	ND	ND	9	9.2	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	34.2	ND	ND	31.1	ND	32.6	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	67.4	ND	ND	ND	ND	67.4	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	ND	ND	ND	ND	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	ND	28.7	ND	ND	ND	28.7	N/A			

i)

Site		Eastern site					July	MATES IV	Reference Exposure Level		
Sample Date		7/4/2014	7/10/2014	7/16/2014	7/22/2014	7/28/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	730	250	210	300	370	372	N/A			
Si	ng/m ³	1100	1500	1200	1500	1800	1420	N/A			
P	ng/m ³	83.6	51.5	48	28.3	65	55.1	N/A			
S	ng/m ³	1700	700	620	420	750	838	N/A			
Cl	ng/m ³	2100	750	320	2900	1100	1434	N/A			
Al	ng/m ³	850	650	550	650	750	690	N/A			
K	ng/m ³	4300	290	240	300	350	1096	478.4 ± 508.8			
Ca	ng/m ³	470	680	520	640	930	648	1261.1 ± 1258.2			
Ti	ng/m ³	83	94	72	110	110	94	72.9 ± 75.5			
V	ng/m ³	ND	ND	ND	ND	ND	ND	3.38 ± 3.25			
Cr	ng/m ³	6.6	6.6	9	11.1	10	8.7	3.79 ± 3.77			
CrVI	ng/m ³	0.4	0.06	0.10	0.18	0	0.18	0.056 ± 0.096			200
Mn	ng/m ³	15.9	13.5	17	11.7	30	17.8	22.4 ± 19.6			
Co	ng/m ³	ND	ND	ND	ND	ND	ND	0.48 ± 0.38			
Ni	ng/m ³	ND	5.2	7	5.9	6	6.0	3.75 ± 4.02	200	60	14
Cu	ng/m ³	170.0	7.9	ND	8.6	14	50.2	36.2 ± 34.8	100000		
Zn	ng/m ³	53.6	29.7	28	30.7	48	38.0	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	600	860	730	840	1200	846	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	ND	ND	13.8	ND	ND	1.87 ± 1.77			
Sr	ng/m ³	120.0	ND	ND	9.7	13	47.6	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	10.4	8.6	ND	10.7	8	9.5	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	ND	ND	ND	ND	ND	ND	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	490.0	ND	ND	ND	ND	490	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	ND	ND	ND	ND	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	ND	18.0	15	15.5	ND	16.0	N/A			

j)

Site		Eastern site					August	MATES IV	Reference Exposure Level		
Sample Date		8/3/2014	8/9/2014	8/15/2014	8/21/2014	8/27/2014	Average	Average \pm SD	Acute	8-Hour	Chronic
Mg	ng/m ³	260	280	340	310	420	322	N/A			
Si	ng/m ³	1250	1700	2250	1500	2500	1840	N/A			
P	ng/m ³	63.0	80.0	66	42.0	55	61.2	N/A			
S	ng/m ³	860	870	780	600	680	758	N/A			
Cl	ng/m ³	620	45	1000	730	1550	789	N/A			
Al	ng/m ³	500	720	980	660	1100	792	N/A			
K	ng/m ³	310	330	400	280	500	364	478.4 \pm 508.8			
Ca	ng/m ³	670	670	1200	740	1150	886	1261.1 \pm 1258.2			
Ti	ng/m ³	67	94	170	88	190	122	72.9 \pm 75.5			
V	ng/m ³	ND	ND	ND	ND	ND	ND	3.38 \pm 3.25			
Cr	ng/m ³	ND	5.9	10	ND	17	11.0	3.79 \pm 3.77			
CrVI	ng/m ³	0.0	0.02	0.10	0.08	0	0.08	0.056 \pm 0.096			200
Mn	ng/m ³	13.0	20.0	22	22.0	49	25.2	22.4 \pm 19.6			
Co	ng/m ³	ND	ND	ND	ND	ND	ND	0.48 \pm 0.38			
Ni	ng/m ³	ND	4.5	6	4.1	10	6.1	3.75 \pm 4.02	200	60	14
Cu	ng/m ³	19.0	15.0	28	13.0	30	21.0	36.2 \pm 34.8	100000		
Zn	ng/m ³	30.0	46.0	61	46.0	69	50.4	67.5 \pm 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	770	910	1400	940	1850	1174	1439.7 \pm 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	0.55 \pm 0.43	200	15	15
Mo	ng/m ³	ND	ND	ND	ND	ND	ND	1.87 \pm 1.77			
Sr	ng/m ³	12.0	17.0	15	13.0	15	14.4	13.25 \pm 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	0.82 \pm 0.93			20000
Br	ng/m ³	19.0	11.0	16	11.0	16	14.6	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	1.31 \pm 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	0.15 \pm 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	5.54 \pm 23.50			
Sb	ng/m ³	ND	ND	ND	ND	ND	ND	4.31 \pm 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	0.075 \pm 0.069			
Ba	ng/m ³	ND	ND	81	ND	94	88	54.4 \pm 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	ND	ND	ND	ND	6.21 \pm 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	0.057 \pm 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	ND	ND	28	33.0	ND	30.5	N/A			

k)

Site		Eastern site					September	MATES IV	Reference Exposure Level		
Sample Date		9/2/2014	9/8/2014	9/14/2014	9/20/2014	9/26/2014	Average	Average ± SD	Acute	8-Hour	Chronic
Mg	ng/m ³	500	320	600	270	570	452	N/A			
Si	ng/m ³	1750	1250	2950	1150	2750	1970	N/A			
P	ng/m ³	55.0	41.0	64	35.0	42	47.4	N/A			
S	ng/m ³	840	560	820	540	550	662	N/A			
Cl	ng/m ³	4300	2550	3150	1500	4750	3250	N/A			
Al	ng/m ³	750	520	1250	490	1150	832	N/A			
K	ng/m ³	390	310	620	260	500	416	478.4 ± 508.8			
Ca	ng/m ³	840	690	1350	590	1150	924	1261.1 ± 1258.2			
Ti	ng/m ³	110	69	160	78	160	115	72.9 ± 75.5			
V	ng/m ³	ND	ND	ND	ND	ND	ND	3.38 ± 3.25			
Cr	ng/m ³	ND	ND	8	5.9	13	8.9	3.79 ± 3.77			
CrVI	ng/m ³	0.1	0.07	0.02	0.07	0	0.07	0.056 ± 0.096			200
Mn	ng/m ³	21.0	15.0	26	10.0	24	19.2	22.4 ± 19.6			
Co	ng/m ³	ND	ND	7	ND	ND	ND	0.48 ± 0.38			
Ni	ng/m ³	ND	4.5	7	5.5	7	6.0	3.75 ± 4.02	200	60	14
Cu	ng/m ³	7.9	10.0	28	11.0	16	14.6	36.2 ± 34.8	100000		
Zn	ng/m ³	39.0	41.0	64	37.0	50	46.2	67.5 ± 55.6			
Ga	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Fe	ng/m ³	950	770	1650	710	1500	1116	1439.7 ± 1344.0			
Ge	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
As	ng/m ³	ND	ND	ND	ND	ND	ND	0.55 ± 0.43	200	15	15
Mo	ng/m ³	ND	ND	ND	ND	10	ND	1.87 ± 1.77			
Sr	ng/m ³	14.0	10.0	19	11.0	16	14.0	13.25 ± 10.96			
Se	ng/m ³	ND	ND	ND	ND	ND	ND	0.82 ± 0.93			20000
Br	ng/m ³	13.0	16.0	22	10.0	13	14.8	N/A			
Rb	ng/m ³	ND	ND	ND	ND	ND	ND	1.31 ± 1.02			
Y	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Nb	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ag	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Cd	ng/m ³	ND	ND	ND	ND	ND	ND	0.15 ± 0.33			20
In	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Sn	ng/m ³	ND	ND	ND	ND	ND	ND	5.54 ± 23.50			
Sb	ng/m ³	ND	ND	ND	ND	ND	ND	4.31 ± 3.54			
Cs	ng/m ³	ND	ND	ND	ND	ND	ND	0.075 ± 0.069			
Ba	ng/m ³	ND	ND	62	ND	73	68	54.4 ± 41.9			
La	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pt	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Au	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Pb	ng/m ³	ND	ND	ND	ND	ND	ND	6.21 ± 5.27			
Bi	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
U	ng/m ³	ND	ND	ND	ND	ND	ND	0.057 ± 0.064			
Sm	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Tl	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Te	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Ce	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Gd	ng/m ³	ND	ND	ND	ND	ND	ND	N/A			
Zr	ng/m ³	ND	25.0	38	42.0	25	32.5	N/A			

Table 7. Concentrations of volatile organic compounds at a location immediately west of the CFW facility.

Sample Date	2/7/2013	2/7/2013	4/26/2013	5/7/2013	Typical Ambient Air
Canister Number	54727	54640	54641	54024	
Sampling time	14:00	14:00	15:47	15:30	
Total NMOC, ppbc	276	640	154	119	100-700 ppbc
Compound	Conc. (ppb)				
ethanol	3.0	3.2	3.82	2.95	
vinyl chloride	N.D.	N.D.	N.D.	N.D.	<0.1
1,3-butadiene	<0.1	<0.1	0.06	N.D.	<0.1-0.2
2-propenal (Acrolein)	0.2	0.3	0.46	0.41	0.1-0.4
acetone	13.4	64.5	9.37	9.11	3.7-13.7
methylene chloride	0.2	0.4	0.17	0.17	0.1-0.4
methyl tert butyl ether	N.D.	N.D.	N.D.	N.D.	<0.1
2-butanone (MEK)	0.4	1.0	0.48	0.76	0.3-0.8
chloroform	<0.1	<0.1	0.02	0.02	<0.1
1,2-dichloroethane	N.D.	N.D.	0.02	N.D.	<0.1
benzene	0.2	0.4	0.32	0.1	0.3-1.3
carbon tetrachloride	0.1	0.1	0.10	0.09	0.1
1,2-dichloropropane	<0.1	<0.1	N.D.	N.D.	<0.1
trichloroethylene	N.D.	N.D.	N.D.	N.D.	<0.1-0.1
toluene	0.4	0.8	0.39	0.25	0.8-4.1
1,2-dibromoethane	<0.1	0.1	N.D.	N.D.	
tetrachloroethylene	<0.1	<0.1	0.03	0.02	<0.1-0.1
ethylbenzene	<0.1	<0.1	0.05	0.03	0.1-0.5
m+p-xylenes	0.3	0.5	0.16	0.09	0.3-1.5
Styrene	0.2	0.2	N.D.	N.D.	<0.1-0.2
o-xylene	<0.1	0.1	0.03	0.02	0.1-0.6
1,4-dichlorobenzene	<0.1	<0.1	N.D.	N.D.	<0.1
1,2-dichlorobenzene	<0.1	<0.1	N.D.	N.D.	<0.1
isoprene	0.2	<0.1	0.14	0.09	
acetylene+ethylene	6.6	11.1	3.72	2.13	1.4-8.3
ethane	10.6	15.3	3.93	3.00	1.0-5.0
propylene	1.2	2.3	0.68	0.48	0.5-2.0
propane	27.8	66.4	16.11	6.66	1.3-16.0
isobutane	2.1	4.7	0.35	0.24	0.8-3.7
1-butene	0.2	0.2	N.D.	N.D.	0.1-0.3
n-butane	1.6	2.9	0.31	0.26	1.2-6.8
n-pentane	0.4	0.8	0.22	0.24	0.6-2.9
1-hexene	<0.1	<0.1	N.D.	N.D.	<0.1-0.1
n-hexane	0.2	0.3	0.05	0.05	0.2-1.0
n-heptane	<0.1	0.2	N.D.	N.D.	0.1-0.6
n-octane	<0.1	<0.1	N.D.	N.D.	<0.1-0.3
n-nonane	0.1	0.4	N.D.	N.D.	<0.1-0.1
n-decane	0.2	0.6	0.04	0.1	<0.1-0.1
n-undecane	<0.1	<0.1	0.03	N.D.	<0.1
n-dodecane	0.1	<0.1	N.D.	N.D.	<0.1