



# Appendix B

## Fine Particulate Speciation Summary- 2009

New Jersey Department of Environmental Protection

**Table 1**  
**Fine Particulate Speciation Data – 2009**  
**Chester, New Jersey**

Concentrations in Micrograms Per Cubic Meter ( $\mu\text{g}/\text{m}^3$ )

<b>Pollutant</b>	<b>Annual Average Concentration</b>	<b>Daily Average Maximum Concentration</b>	<b>Daily Average 2nd Highest Concentration</b>
Aluminum	0.0201	0.2303	0.1915
Ammonium	0.8710	3.3744	3.0015
Antimony	0.0040	0.0921	0.0724
Arsenic	0.0003	0.0036	0.0024
Barium	0.0001	0.0043	0.0034
Bromine	0.0019	0.0099	0.0083
Cadmium	0.0023	0.0233	0.0222
Calcium	0.0111	0.1252	0.0424
Cerium	0.0001	0.0034	0.0019
Cesium	0.0009	0.0115	0.0090
Chlorine	0.0081	0.1780	0.1613
Chromium	0.0019	0.0341	0.0137
Cobalt	0.0003	0.0020	0.0014
Copper	0.0014	0.0133	0.0128
Elemental carbon **	0.2592	0.6424	0.6042
Europium *	0.0005	0.0073	0.0002
Gallium *	0.0001	0.0006	0.0002
Gold *	0.0005	0.0030	0.0022
Hafnium *	0.0010	0.0072	0.0030
Indium	0.0020	0.0292	0.0198
Iridium *	0.0001	0.0019	0.0001
Iron	0.0284	0.1403	0.0758
Lanthanum *	0.0005	0.0060	0.0016
Lead	0.0012	0.0065	0.0062
Magnesium	0.0013	0.0219	0.0129
Manganese	0.0007	0.0039	0.0033
Mercury *	0.0009	0.0067	0.0064
Molybdenum *	0.0000	0.0001	0.0000
Nickel	0.0012	0.0099	0.0069
Niobium *	0.0004	0.0038	0.0015
Nitrate	0.8957	5.9144	5.6407
Organic carbon **	2.6178	10.0994	7.3078

**Table 1 (Continued)**  
**Fine Particulate Speciation Data – 2009**  
**Chester, New Jersey**

Concentrations in Micrograms Per Cubic Meter ( $\mu\text{g}/\text{m}^3$ )

<b>Pollutant</b>	<b>Annual Average Concentration</b>	<b>Daily Average Maximum Concentration</b>	<b>Daily Average 2nd Highest Concentration</b>
Phosphorus	0.0000	0.0007	0.0004
Potassium	0.0285	0.1157	0.1106
Rubidium	0.0002	0.0026	0.0017
Samarium *	0.0005	0.0043	0.0012
Scandium *	0.0001	0.0013	0.0004
Selenium	0.0003	0.0022	0.0022
Silicon	0.0277	0.0886	0.0857
Silver	0.0018	0.0152	0.0151
Sodium	0.0917	1.2216	0.5725
Strontium	0.0004	0.0088	0.0055
Sulfate	2.0824	9.9655	8.1209
Sulfur	0.6883	3.4026	3.1155
Tantalum *	0.0001	0.0014	0.0004
Terbium *	0.0001	0.0015	0.0000
Tin	0.0028	0.0455	0.0373
Titanium	0.0005	0.0039	0.0036
Total mass	7.7117	22.6804	21.8602
Vanadium	0.0004	0.0047	0.0040
Wolfram *	0.0004	0.0058	0.0000
Yttrium *	0.0002	0.0019	0.0006
Zinc	0.0036	0.0183	0.0147
Zirconium	0.0005	0.0222	0.0093

\* Analyses for these elements were discontinued in February 2009.

\*\* Sampling method for Elemental and Organic Carbon changed in October 2009.

**Table 2**  
**Fine Particulate Speciation Data – 2009**  
**Elizabeth Lab, New Jersey**

Concentrations in Micrograms Per Cubic Meter ( $\mu\text{g}/\text{m}^3$ )

<b>Pollutant</b>	<b>Annual Average Concentration</b>	<b>Daily Average Maximum Concentration</b>	<b>Daily Average 2nd Highest Concentration</b>
Aluminum	0.0370	0.2789	0.1631
Ammonium	1.2702	4.1607	3.9621
Antimony	0.0049	0.0558	0.0504
Arsenic	0.0004	0.0031	0.0026
Barium	0.0020	0.0545	0.0129
Bromine	0.0029	0.0098	0.0097
Cadmium	0.0020	0.0209	0.0174
Calcium	0.0325	0.1981	0.1320
Cerium	0.0002	0.0117	0.0058
Cesium	0.0007	0.0105	0.0078
Chlorine	0.0337	0.4101	0.3692
Chromium	0.0039	0.1797	0.0245
Cobalt	0.0006	0.0030	0.0024
Copper	0.0065	0.0365	0.0339
Elemental carbon **	1.3896	7.6205	5.4183
Europium *	0.0002	0.0017	0.0009
Gallium *	0.0000	0.0005	0.0000
Gold *	0.0005	0.0030	0.0022
Hafnium *	0.0006	0.0067	0.0019
Indium	0.0021	0.0201	0.0201
Iridium *	0.0004	0.0037	0.0012
Iron	0.1372	0.8607	0.8092
Lanthanum *	0.0005	0.0039	0.0024
Lead	0.0021	0.0162	0.0154
Magnesium	0.0054	0.0568	0.0525
Manganese	0.0019	0.0150	0.0105
Mercury *	0.0004	0.0016	0.0014
Molybdenum *	0.0002	0.0013	0.0010
Nickel	0.0036	0.0584	0.0159
Niobium *	0.0001	0.0016	0.0000
Nitrate	1.4992	7.7097	6.9492
Organic carbon **	3.9683	10.9127	10.5151
Phosphorus	0.0000	0.0039	0.0000
Potassium	0.0401	0.2328	0.1973
Rubidium	0.0002	0.0024	0.0023
Samarium *	0.0002	0.0029	0.0001
Scandium *	0.0001	0.0021	0.0000
Selenium	0.0003	0.0028	0.0023

**Table 2 (Continued)**  
**Fine Particulate Speciation Data – 2009**  
**Elizabeth Lab, New Jersey**

Concentrations in Micrograms Per Cubic Meter ( $\mu\text{g}/\text{m}^3$ )

<b>Pollutant</b>	<b>Annual Average Concentration</b>	<b>Daily Average Maximum Concentration</b>	<b>Daily Average 2nd Highest Concentration</b>
Silicon	0.0721	0.4197	0.2901
Silver	0.0016	0.0205	0.0128
Sodium	0.1364	0.5949	0.5060
Strontium	0.0009	0.0130	0.0109
Sulfate	2.4776	9.7694	7.9175
Sulfur	0.8520	3.3016	2.9982
Tantalum *	0.0004	0.0034	0.0023
Terbium *	0.0001	0.0015	0.0000
Tin	0.0028	0.0500	0.0407
Titanium	0.0028	0.0309	0.0228
Total mass	12.3599	38.9289	28.7067
Vanadium	0.0055	0.0400	0.0310
Wolfram *	0.0004	0.0055	0.0000
Yttrium *	0.0002	0.0008	0.0006
Zinc	0.0105	0.0572	0.0470
Zirconium	0.0006	0.0105	0.0105

\* Analyses for these elements were discontinued in February 2009.

\*\* Sampling method for Elemental and Organic Carbon changed in October 2009.

**Table 3**  
**Fine Particulate Speciation Data – 2009**  
**New Brunswick, New Jersey**

Concentrations in Micrograms Per Cubic Meter ( $\mu\text{g}/\text{m}^3$ )

<b>Pollutant</b>	<b>Annual Average Concentration</b>	<b>Daily Average Maximum Concentration</b>	<b>Daily Average 2nd Highest Concentration</b>
Aluminum	0.0301	0.1611	0.1359
Ammonium	1.0029	3.6188	3.4589
Antimony	0.0074	0.0630	0.0583
Arsenic	0.0004	0.0040	0.0027
Barium	0.0007	0.0197	0.0084
Bromine	0.0023	0.0091	0.0089
Cadmium	0.0023	0.0198	0.0187
Calcium	0.0206	0.0768	0.0550
Cerium	0.0001	0.0018	0.0016
Cesium	0.0013	0.0110	0.0085
Chlorine	0.0221	0.7495	0.2863
Chromium	0.0065	0.2488	0.0469
Cobalt	0.0005	0.0054	0.0020
Copper	0.0041	0.0291	0.0211
Elemental carbon **	0.4404	1.3326	1.2101
Europium *	0.0002	0.0026	0.0000
Gallium *	0.0000	0.0000	0.0000
Gold *	0.0001	0.0016	0.0003
Hafnium *	0.0001	0.0018	0.0000
Indium	0.0031	0.0269	0.0234
Iridium *	0.0005	0.0049	0.0014
Iron	0.0767	0.8756	0.1859
Lanthanum *	0.0001	0.0013	0.0000
Lead	0.0016	0.0087	0.0071
Magnesium	0.0035	0.0642	0.0511
Manganese	0.0014	0.0148	0.0091
Mercury *	0.0004	0.0057	0.0000
Molybdenum *	0.0000	0.0004	0.0000
Nickel	0.0027	0.0831	0.0128
Niobium *	0.0000	0.0000	0.0000
Nitrate	1.1902	7.4776	6.5308
Organic carbon **	3.0094	7.9624	7.5228
Phosphorus	0.0000	0.0009	0.0000
Potassium	0.0370	0.2025	0.1704
Rubidium	0.0002	0.0031	0.0019
Samarium *	0.0001	0.0009	0.0003
Scandium *	0.0000	0.0006	0.0000
Selenium	0.0005	0.0045	0.0036

**Table 3 (Continued)**  
**Fine Particulate Speciation Data – 2009**  
**New Brunswick, New Jersey**

Concentrations in Micrograms Per Cubic Meter ( $\mu\text{g}/\text{m}^3$ )

<b>Pollutant</b>	<b>Annual Average Concentration</b>	<b>Daily Average Maximum Concentration</b>	<b>Daily Average 2nd Highest Concentration</b>
Silicon	0.0471	0.2714	0.1591
Silver	0.0019	0.0187	0.0177
Sodium	0.1100	0.7395	0.6257
Strontium	0.0007	0.0120	0.0065
Sulfate	2.2381	9.9168	8.0463
Sulfur	0.7251	3.2836	2.8459
Tantalum *	0.0003	0.0035	0.0005
Terbium *	0.0000	0.0000	0.0000
Tin	0.0041	0.0373	0.0361
Titanium	0.0015	0.0098	0.0084
Total mass	9.2756	26.7894	24.6773
Vanadium	0.0007	0.0071	0.0069
Wolfram *	0.0001	0.0007	0.0000
Yttrium *	0.0001	0.0007	0.0005
Zinc	0.0056	0.0216	0.0202
Zirconium	0.0004	0.0093	0.0058

\* Analyses for these elements were discontinued in February 2009.

\*\* Sampling method for Elemental and Organic Carbon changed in October 2009.