



Chemistry Table 1. This Table summarizes data for major elements and all trace elements analyzed in the WTC dust and beam coating samples. Some elements (such as mercury and tin) were not analyzed in these samples. Major elements are listed in percent concentration and trace elements are listed in parts per million concentration. One percent equals 10,000 parts per million.

| Chemistry Table 1 | | | | | |
|--------------------------|----------------------|-----------|----------|----------|-----------|
| | Outdoor dust samples | | | | |
| | WTC 01-02 | WTC 01-03 | WTC01-05 | WTC01-06 | WTC 01-14 |
| Silicon % | 21.2 | 26.3 | 11.4 | 11.4 | 15.3 |
| Calcium % | 15.01 | 9.58 | 20.94 | 20.58 | 17.65 |
| Magnesium % | 3.11 | 2.23 | 2.73 | 2.73 | 2.83 |
| Sulfur % | 1.33 | 0.87 | nm | nm | 4.32 |
| Iron % | 4.13 | 2.16 | 1.41 | 1.42 | 1.87 |
| Aluminum % | 4.13 | 2.75 | 2.75 | 2.73 | 2.86 |
| Carbon, organic % | 0.98 | 3.55 | nm | nm | 3.08 |
| Carbon, Carbonate % | 1.24 | 1.63 | nm | nm | 1.46 |
| Sodium % | 0.82 | 0.76 | 0.50 | 0.50 | 0.59 |
| Potassium % | 0.63 | 0.69 | 0.46 | 0.47 | 0.56 |
| Titanium % | 0.39 | 0.25 | 0.24 | 0.24 | 0.31 |
| Manganese % | 0.15 | 0.08 | 0.10 | 0.10 | 0.12 |
| Phosphorous % | 0.03 | 0.05 | 0.03 | 0.03 | 0.02 |
| Loss on Ignition % | 7.96 | 13.6 | 19.6 | 19.6 | 18.1 |
| Barium ppm | 765 | 376 | nm | nm | 461 |
| Strontium ppm | 1000 | 409 | nm | nm | 643 |
| Zinc ppm | 2990 | 1200 | nm | nm | 1570 |
| Lead ppm | 710 | 176 | nm | nm | 276 |
| Copper ppm | 438 | 142 | nm | nm | 242 |
| Cerium ppm | 108 | 50.9 | nm | nm | 68.8 |
| Yttrium ppm | 58.9 | 30.2 | nm | nm | 46.5 |
| Chromium ppm | 224 | 98 | nm | nm | 116 |
| Nickel ppm | 88.4 | 30.8 | nm | nm | 28.6 |
| Lanthanum ppm | 51 | 25.8 | nm | nm | 34.8 |
| Antimony ppm | 52.1 | 26.3 | nm | nm | 40.2 |
| Vanadium ppm | 38.8 | 42.5 | nm | nm | 30.6 |
| Molybdenum ppm | 25.4 | 14.5 | nm | nm | 19.1 |
| Lithium ppm | 27.4 | 17.4 | nm | nm | 23.2 |
| Thorium ppm | 11.2 | 5.56 | nm | nm | 7.92 |

| | | | | | |
|---------------|------|------|----|----|------|
| Rubidium ppm | 21.2 | 23.7 | nm | nm | 25.2 |
| Cobalt ppm | 13.9 | 8.4 | nm | nm | 7.1 |
| Niobium ppm | 11 | 7.8 | nm | nm | 9.1 |
| Scandium ppm | 8.8 | 6.6 | nm | nm | 6.1 |
| Uranium ppm | 3.92 | 1.96 | nm | nm | 2.89 |
| Cadmium ppm | 7.3 | 3.2 | nm | nm | 3.4 |
| Arsenic ppm | 6.8 | 3.7 | nm | nm | 5.1 |
| Gallium ppm | 6 | 5.4 | nm | nm | 4.1 |
| Beryllium ppm | 3.7 | 2.2 | nm | nm | 2.9 |
| Silver ppm | 1.2 | 3.8 | nm | nm | 1.2 |
| Cesium ppm | 0.73 | 0.76 | nm | nm | 0.88 |
| Bismuth ppm | 0.5 | 0.68 | nm | nm | 0.56 |
| Thallium ppm | 0.1 | 0.13 | nm | nm | 0.11 |

nm - not measured; ppm - parts per million

Chemistry Table 1, continued

| | Outdoor dust samples, continued | | | | |
|---------------------|---------------------------------|-----------|----------|-----------|-----------|
| | WTC 01-15 | WTC 01-16 | WTC01-17 | WTC 01-21 | WTC 01-22 |
| Silicon % | 13.6 | 17.0 | 16.0 | 12.8 | 17.0 |
| Calcium % | 18.58 | 13.36 | 17.01 | 18.94 | 16.80 |
| Magnesium % | 2.64 | 1.79 | 2.06 | 2.68 | 2.77 |
| Sulfur % | 5.40 | 3.68 | nm | 5.10 | 3.70 |
| Iron % | 1.87 | 1.92 | 1.71 | 1.49 | 2.78 |
| Aluminum % | 2.59 | 2.27 | 2.30 | 2.73 | 2.78 |
| Carbon, organic % | 2.30 | 2.51 | nm | 4.02 | 2.55 |
| Carbon, Carbonate % | 1.48 | 1.47 | nm | 1.44 | 1.31 |
| Sodium % | 0.66 | 0.87 | 0.93 | 0.50 | 0.83 |
| Potassium % | 0.49 | 0.69 | 0.54 | 0.50 | 0.52 |
| Titanium % | 0.25 | 0.26 | 0.25 | 0.24 | 0.29 |
| Manganese % | 0.10 | 0.07 | 0.07 | 0.12 | 0.12 |
| Phosphorous % | 0.03 | 0.02 | 0.02 | 0.03 | 0.03 |
| Loss on Ignition % | 17.3 | 22.8 | 15.9 | 21.2 | 15.3 |
| Barium ppm | 405 | 3670 | nm | 460 | 452 |
| Strontium ppm | 736 | 3130 | nm | 787 | 710 |
| Zinc ppm | 1110 | 1410 | nm | 1500 | 1380 |
| Lead ppm | 152 | 208 | nm | 278 | 452 |
| Copper ppm | 367 | 307 | nm | 153 | 130 |
| Cerium ppm | 64.9 | 132 | nm | 77 | 72 |
| Yttrium ppm | 46.1 | 31.4 | nm | 54.5 | 47.6 |
| Chromium ppm | 129 | 95.2 | nm | 104 | 111 |
| Nickel ppm | 32.9 | 31.4 | nm | 31.2 | 30.6 |

| | | | | | |
|----------------|------|------|----|------|------|
| Lanthanum ppm | 32.7 | 69.9 | nm | 38.6 | 35.4 |
| Antimony ppm | 30.2 | 148 | nm | 33.1 | 27.5 |
| Vanadium ppm | 27.1 | 24.9 | nm | 27.9 | 29.7 |
| Molybdenum ppm | 12.1 | 10 | nm | 9 | 6.9 |
| Lithium ppm | 22.1 | 18 | nm | 23.3 | 23 |
| Thorium ppm | 7.3 | 5.36 | nm | 8.48 | 8.5 |
| Rubidium ppm | 21.6 | 21.6 | nm | 21 | 21.1 |
| Cobalt ppm | 6.5 | 6.5 | nm | 5.3 | 6.3 |
| Niobium ppm | 7.6 | 6.6 | nm | 9 | 9.2 |
| Scandium ppm | 5.9 | 4.4 | nm | 6.2 | 6.2 |
| Uranium ppm | 2.71 | 2.3 | nm | 3.16 | 3.09 |
| Cadmium ppm | 4 | 3 | nm | 4.6 | 3.8 |
| Arsenic ppm | 4 | 4.3 | nm | 3.6 | 6.6 |
| Gallium ppm | 3.9 | 4.3 | nm | 3.9 | 4 |
| Beryllium ppm | 2.4 | 1.8 | nm | 2.9 | 2.9 |
| Silver ppm | 1.4 | 1.5 | nm | 2.4 | 1.4 |
| Cesium ppm | 0.78 | 0.87 | nm | 0.76 | 0.76 |
| Bismuth ppm | 0.25 | 0.28 | nm | 0.5 | 0.43 |
| Thallium ppm | 0.11 | 0.12 | nm | 0.1 | 0.1 |

nm - not measured; ppm - parts per million

Chemistry Table 1, continued

| Outdoor dust samples, continued | | | | | |
|---------------------------------|-----------|-----------|-----------|----------|----------|
| | WTC 01-25 | WTC 01-27 | WTC 01-28 | WTC01-30 | WTC01-34 |
| Silicon % | 13.2 | 15.2 | 13.8 | 15.1 | 12.2 |
| Calcium % | 20.37 | 19.51 | 19.65 | 19.73 | 20.51 |
| Magnesium % | 3.29 | 3.04 | 2.83 | 3.49 | 3.01 |
| Sulfur % | 4.03 | 4.29 | 4.56 | nm | nm |
| Iron % | 1.33 | 1.72 | 1.80 | 1.85 | 1.45 |
| Aluminum % | 3.28 | 3.05 | 2.95 | 3.59 | 2.98 |
| Carbon, organic % | 2.94 | 1.95 | 2.42 | nm | nm |
| Carbon, Carbonate % | 1.87 | 1.82 | 1.68 | nm | nm |
| Sodium % | 0.62 | 0.62 | 0.76 | 0.71 | 0.50 |
| Potassium % | 0.56 | 0.50 | 0.54 | 0.56 | 0.51 |
| Titanium % | 0.29 | 0.29 | 0.26 | 0.29 | 0.25 |
| Manganese % | 0.15 | 0.12 | 0.12 | 0.14 | 0.12 |
| Phosphorous % | 0.03 | 0.03 | 0.02 | 0.04 | 0.03 |
| Loss on Ignition % | 17.5 | 14.4 | 16.7 | 17.5 | 18.5 |
| Barium ppm | 624 | 470 | 491 | nm | nm |
| Strontium ppm | 695 | 701 | 711 | nm | nm |
| Zinc ppm | 1910 | 1650 | 1720 | nm | nm |

| | | | | | |
|----------------|------|------|------|----|----|
| Lead ppm | 756 | 204 | 234 | nm | nm |
| Copper ppm | 251 | 188 | 218 | nm | nm |
| Cerium ppm | 85 | 77.7 | 75 | nm | nm |
| Yttrium ppm | 61.6 | 54.9 | 53.8 | nm | nm |
| Chromium ppm | 134 | 126 | 106 | nm | nm |
| Nickel ppm | 39.2 | 39.4 | 26.1 | nm | nm |
| Lanthanum ppm | 43.5 | 39.5 | 38.4 | nm | nm |
| Antimony ppm | 65.8 | 50.4 | 51.8 | nm | nm |
| Vanadium ppm | 30.5 | 30 | 28.9 | nm | nm |
| Molybdenum ppm | 30.9 | 27.1 | 42 | nm | nm |
| Lithium ppm | 28.5 | 25.2 | 24.8 | nm | nm |
| Thorium ppm | 9.94 | 9.14 | 8.48 | nm | nm |
| Rubidium ppm | 24 | 21.7 | 22.5 | nm | nm |
| Cobalt ppm | 7.4 | 6.2 | 5.9 | nm | nm |
| Niobium ppm | 11 | 11 | 10 | nm | nm |
| Scandium ppm | 7.1 | 6.6 | 6.2 | nm | nm |
| Uranium ppm | 3.78 | 3.36 | 3.27 | nm | nm |
| Cadmium ppm | 7.5 | 5 | 5.2 | nm | nm |
| Arsenic ppm | 4.2 | 5 | 4.8 | nm | nm |
| Gallium ppm | 4.3 | 4.3 | 4.1 | nm | nm |
| Beryllium ppm | 3.6 | 3.2 | 3.1 | nm | nm |
| Silver ppm | 1.4 | 1.4 | 1.7 | nm | nm |
| Cesium ppm | 0.83 | 0.77 | 0.76 | nm | nm |
| Bismuth ppm | 0.67 | 0.4 | 0.48 | nm | nm |
| Thallium ppm | 0.1 | 0.09 | 0.11 | nm | nm |

nm - not measured; ppm - parts per million

Chemistry Table 1, continued

| | Indoor dust samples | | Girder coatings | | |
|---------------------|---------------------|-----------|-----------------|-----------|--|
| | WTC 01-20 | WTC 01-36 | WTC 01-08 | WTC 01-09 | |
| Silicon % | 14.2 | 11.7 | 15.0 | 15.5 | |
| Calcium % | 19.44 | 21.30 | 20.73 | 26.01 | |
| Magnesium % | 2.59 | 2.88 | 6.94 | 3.23 | |
| Sulfur % | 5.51 | 5.77 | 1.39 | 1.23 | |
| Iron % | 1.25 | 1.38 | 1.25 | 0.55 | |
| Aluminum % | 2.55 | 2.86 | 2.92 | 3.56 | |
| Carbon, organic % | 2.68 | 2.32 | 2.48 | 2.45 | |
| Carbon, Carbonate % | 1.27 | 1.50 | 1.89 | 1.86 | |
| Sodium % | 1.16 | 0.58 | 0.12 | 0.16 | |
| Potassium % | 0.46 | 0.46 | 0.28 | 0.32 | |
| Titanium % | 0.25 | 0.23 | 0.21 | 0.28 | |

| | | | | | |
|--------------------|------|------|-------|------|--|
| Manganese % | 0.10 | 0.11 | 0.14 | 0.19 | |
| Phosphorous % | 0.02 | 0.02 | 0.01 | 0.01 | |
| Loss on Ignition % | 15.7 | 16.9 | 15.8 | 13 | |
| Barium ppm | 390 | 438 | 317 | 472 | |
| Strontium ppm | 706 | 823 | 444 | 378 | |
| Zinc ppm | 1330 | 1400 | 57.4 | 101 | |
| Lead ppm | 153 | 159 | 9.13 | 11.7 | |
| Copper ppm | 176 | 95 | 10.3 | 12.8 | |
| Cerium ppm | 61.6 | 70.2 | 202 | 356 | |
| Yttrium ppm | 44.1 | 52.6 | 134 | 243 | |
| Chromium ppm | 94 | 107 | 153 | 86.5 | |
| Nickel ppm | 29.8 | 28.5 | 202 | 22.6 | |
| Lanthanum ppm | 31.3 | 35.6 | 102 | 175 | |
| Antimony ppm | 38.9 | 33.9 | 0.56 | 1.2 | |
| Vanadium ppm | 25 | 28.6 | 30.5 | 40.1 | |
| Molybdenum ppm | 19 | 16.1 | 0.85 | 1.2 | |
| Lithium ppm | 21.9 | 24.9 | 25.2 | 36.4 | |
| Thorium ppm | 7.25 | 8.64 | 17.9 | 30.7 | |
| Rubidium ppm | 18.9 | 21.1 | 8 | 8.2 | |
| Cobalt ppm | 5 | 5.3 | 12.3 | 1.7 | |
| Niobium ppm | 8 | 9 | 4.4 | 6.3 | |
| Scandium ppm | 5.4 | 6.4 | 9.2 | 9.8 | |
| Uranium ppm | 2.7 | 3.23 | 4.72 | 7.57 | |
| Cadmium ppm | 4.2 | 5.8 | 0.11 | 0.21 | |
| Arsenic ppm | 3.5 | 3.8 | < 2 | < 2 | |
| Gallium ppm | 3.6 | 4 | 2.8 | 4.2 | |
| Beryllium ppm | 2.5 | 3.1 | 4 | 4.2 | |
| Silver ppm | 3.5 | 1.6 | 1.8 | 0.96 | |
| Cesium ppm | 0.72 | 0.78 | 0.18 | 0.22 | |
| Bismuth ppm | 0.64 | 0.82 | 0.008 | 0.01 | |
| Thallium ppm | 0.09 | 0.09 | 0.02 | 0.02 | |

nm - not measured; ppm - parts per million

Chemistry Table 1, continued

| | minimum | maximum | mean* | | |
|-------------------|---------|---------|-------|--|--|
| Silicon % | 11.4 | 26.3 | 14.8 | | |
| Calcium % | 9.58 | 26.01 | 18.36 | | |
| Magnesium % | 1.79 | 6.94 | 2.88 | | |
| Sulfur % | 0.87 | 5.77 | 3.11 | | |
| Iron % | 0.55 | 4.13 | 1.63 | | |
| Aluminum % | 2.27 | 4.13 | 2.90 | | |
| Carbon, organic % | 0.98 | 4.02 | 2.48 | | |

| | | | | | |
|---------------------|-------|------|---------|--|--|
| Carbon, Carbonate % | 1.24 | 1.89 | 1.55 | | |
| Sodium % | 0.12 | 1.16 | 0.57 | | |
| Potassium % | 0.28 | 0.69 | 0.50 | | |
| Titanium % | 0.21 | 0.39 | 0.26 | | |
| Manganese % | 0.07 | 0.19 | 0.11 | | |
| Phosphorous % | 0.01 | 0.05 | 0.02 | | |
| Loss on Ignition % | 7.96 | 22.8 | 16.35 | | |
| Barium ppm | 317 | 3670 | 533.38 | | |
| Strontium ppm | 378 | 3130 | 726.61 | | |
| Zinc ppm | 57.4 | 2990 | 1004.70 | | |
| Lead ppm | 9.13 | 756 | 166.75 | | |
| Copper ppm | 10.3 | 438 | 136.31 | | |
| Cerium ppm | 50.9 | 356 | 91.23 | | |
| Yttrium ppm | 30.2 | 243 | 57.45 | | |
| Chromium ppm | 86.5 | 224 | 116.61 | | |
| Nickel ppm | 22.6 | 202 | 37.77 | | |
| Lanthanum ppm | 25.8 | 175 | 45.96 | | |
| Antimony ppm | 0.56 | 148 | 24.84 | | |
| Vanadium ppm | 24.9 | 42.5 | 30.67 | | |
| Molybdenum ppm | 0.85 | 42 | 11.34 | | |
| Lithium ppm | 17.4 | 36.4 | 24.00 | | |
| Thorium ppm | 5.36 | 30.7 | 9.31 | | |
| Rubidium ppm | 8 | 25.2 | 19.01 | | |
| Cobalt ppm | 1.7 | 13.9 | 6.36 | | |
| Niobium ppm | 4.4 | 11 | 8.34 | | |
| Scandium ppm | 4.4 | 9.8 | 6.63 | | |
| Uranium ppm | 1.96 | 7.57 | 3.29 | | |
| Cadmium ppm | 0.11 | 7.5 | 2.80 | | |
| Arsenic ppm | 3.5 | 6.8 | *** | | |
| Gallium ppm | 2.8 | 6 | 4.15 | | |
| Beryllium ppm | 1.8 | 4.2 | 2.96 | | |
| Silver ppm | 0.96 | 3.8 | 1.66 | | |
| Cesium ppm | 0.18 | 0.88 | 0.64 | | |
| Bismuth ppm | 0.008 | 0.82 | 0.28 | | |
| Thallium ppm | 0.02 | 0.13 | 0.08 | | |

*Geometric mean for all parameters except pH; ***Geometric mean not calculated due to one or more samples having concentrations below detection limit; ppm - parts per million

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