Supplemental Information

Supplemental Table 1. Analytic limits of detection for analyses on human blood and serum, dolphin blood or blubber, and fish tissue.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Analyte** | **1 Human blood (metals) or serum (other analytes)** | | **Dolphin blood (PFAS) or blubber (all others analyzed)** | | | | | | | **6 Fish tissue** | |
| **3 Sapelo Island** | | **4 Miami** | | | **5 Charleston Harbor** | |  | |
| **Units** | **LOD** | **Units** | **LOD** | **Units** | | **LOD**  **Range** | **Units** | **LOD**  **Range** | **Units** | **Reporting Limit Range** |
| **Heavy Metals** | | | | | | | | | | | |
| Cadmium | µg/L | 0.14 | \* |  | \* | |  | \* |  | \* |  |
| Lead | µg/dL | 0.28 | \* |  | \* | |  | \* |  | \* |  |
| Mercury | µg/L | 0.2 | \* |  | \* | |  | \* |  | mg/kg | 0.02 |
| 2 Selenium | µg/L | 4.5 | \* |  | \* | |  | \* |  | mg/kg | 0.2 |
| **Polybrominated diphenyl ethers** | | | | | | | | | | | |
| PBDE 17 | ng/g lipid | 1.0 | \* |  | \* | |  | \* |  | \* |  |
| PBDE 28 | ng/g lipid | 0.8 | \* |  | \* | |  | \* |  | \* |  |
| PBDE 47 | ng/g lipid | 4.2 | ng/g | 1-4 | ng/g | | 0.20-10 | ng/g | 1-4 | ng/g | 0.0087-0.0092 |
| PBDE 66 | ng/g lipid | 1.0 | \* |  | \* | |  | \* |  | \* |  |
| PBDE 85 | ng/g lipid | 2.4 | \* |  | \* | |  | \* |  | \* |  |
| PBDE 99 | ng/g lipid | 5.0 | ng/g | 1-4 | ng/g | | 0.09-0.97 | ng/g | 1-4 | ng/g | 0.016-0.017 |
| PBDE 100 | ng/g lipid | 1.4 | ng/g | 1-4 | ng/g | | 0.09-0.44 | ng/g | 1-4 | ng/g | 0.016-0.017 |
| PBDE 153 | ng/g lipid | 2.2 | ng/g | 1-4 | ng/g | | 0.19-0.97 | ng/g | 1-4 | ng/g | 0.0082-0.0087 |
| PBDE 154 | ng/g lipid | 0.8 | ng/g | 1-4 | ng/g | | 0.19-0.97 | ng/g | 1-4 | ng/g | 0.107-0.011 |
| PBDE 183 | ng/g lipid | 1.7 | \* |  | \* | |  | \* |  | \* |  |
| PBDE 209 | \* |  | \* |  | \* | |  | \* |  | \* |  |
| **Chlorinated pesticides** | | | | | | | | | | | |
| Hexachlorobenzene | ng/g lipid | 7.8 | ng/g | 1 | ng/g | | 0.71-3.66 | ng/g | 1 | ng/g | 0.21-0.22 |
| β-hexachlorocyclohexane | ng/g lipid | 7.8 | ng/g | 1 | ng/g | | 1 | ng/g | 1 | ng/g | 0.2 |
| -hexachlorocyclohexane (lindane) | ng/g lipid | 7.8 | ng/g | 1 | ng/g | | 1 | ng/g | 1 | ng/g | 0.95-1.01 |
| Oxychlordane | ng/g lipid | 7.8 | ng/g | 1 | ng/g | | 1 | ng/g | 1 | ng/g | 0.0078-0.008 |
| *Trans*-nonachlor | ng/g lipid | 7.8 | ng/g | 1 | ng/g | | 0.66-3.60 | ng/g | 1 | ng/g | 0.008-0.009 |
| *p,p* ’-DDD |  | \* | ng/g | 1 | ng/g | | 0.72-3.69 | ng/g | 1 | ng/g | 0.008-0.009 |
| *p,p’-*DDE | ng/g lipid | 7.8 | ng/g | 1 | ng/g | | 0.71-3.66 | ng/g | 1 | ng/g | 0.008-0.009 |
| *o,p*‘-DDT | ng/g lipid | 7.8 | ng/g | 1 | ng/g | | 0.71-3.66 | ng/g | 1 | ng/g | 0.019-0.020 |
| *p,p*‘*-DDT* |  | \* | ng/g | 1 | ng/g | | 0.71-3.66 | ng/g | 1 | ng/g | 0.019-0.020 |
| Mirex | ng/g lipid | 7.8 | ng/g | 1 | ng/g | | 0.71-3.66 | ng/g | 1 | ng/g | 0.008-0.009 |
| **Dioxins and furans and planar PCB congeners** | | | | | | | | | | | |
| 1,2,3,4,6,7,8,-Hepta CDD | pg/g lipid | 13.0 | \* |  | \* |  | | \* |  | \* |  |
| 1,2,3,4,6,7,8-Hepat CDF | pg/g lipid | 8.6 | \* |  | \* |  | | \* |  | \* |  |
| 1,2,3,4,7,8,9-Hepta CDF | pg/g lipid | 7.4 | \* |  | \* |  | | \* |  | \* |  |
| 1,2,3,4,7,8-Hepta CDF | pg/g lipid | 12.3 | \* |  | \* |  | | \* |  | \* |  |
| 1,2,3,4,7,8-Hepta CDD | pg/g lipid | 7.9 | \* |  | \* |  | | \* |  | \* |  |
| 1,2,3,6,7,8-Hepta CDD | pg/g lipid | 12.3 | \* |  | \* |  | | \* |  | \* |  |
| 1,2,3,6,7,8-Hepta CDF | pg/g lipid | 4.5 | \* |  | \* |  | | \* |  | \* |  |
| 1,2,3,7,8,9-Hepat CDD | pg/g lipid | 7.1 | \* |  | \* |  | | \* |  | \* |  |
| OCDD | pg/g lipid | 218 | \* |  | \* |  | | \* |  | \* |  |
| OCDF | pg/g lipid | 12.0 | \* |  | \* |  | | \* |  | \* |  |
| Total HPCDD | \* |  | \* |  | \* |  | | \* |  | \* |  |
| Total HPCDF | \* |  | \* |  | \* |  | | \* |  | \* |  |
| Total HXCDD | \* |  | \* |  | \* |  | | \* |  | \* |  |
| Total HXCDF | \* |  | \* |  | \* |  | | \* |  | \* |  |
| Total PECDF | \* |  | \* |  | \* |  | | \* |  | \* |  |
| Total TCDF | \* |  | \* |  | \* |  | | \* |  | \* |  |
| PCB 169 | \* |  | \* |  | \* |  | | \* |  | ng/g lipid | 0.00078-0.00082 |
| PCB 126 | \* |  | \* |  | \* |  | | \* |  | ng/g lipid | 0.00086-0.00092 |
| PCB 77 | \* |  | \* |  | \* |  | | \* |  | ng/g lipid | 0.00096-0.001 |
| PCB 81 | \* |  | \* |  | \* |  | | \* |  | \* |  |
| **Per- and polyflouroalkyl substances (PFAS)** | | | | | | | | | | | |
| Et-PFOSA-AcOH | \* |  | 7ng/g | 1 | \* |  | | 8NA |  | \* |  |
| Me-PFOSA-AcOH | µg/L | 0.5 | ng/g | 1 | \* |  | | NA |  | \* |  |
| PFDeA | µg/L | 0.3 | ng/g | 1 | \* |  | | NA |  | \* |  |
| PFHxS | µg/L | 0.3 | ng/g | 1 | \* |  | | NA |  | \* |  |
| PFNA | µg/L | 0.1 | ng/g | 1 | \* |  | | NA |  | \* |  |
| PFOA | µg/L | 0.1 | ng/g | 1 | \* |  | | NA |  | \* |  |
| PFOS | µg/L | 0.4 | ng/g | 1 | \* |  | | NA |  | \* |  |
| PFOSA | µg/L | 0.2 | ng/g | 1 | \* |  | | NA |  | \* |  |
| **Polychlorinated biphenyl congeners (PCBs)** | | | | | | | | | | | |
| PCB 28 | ng/g lipid | 1.7 | ng/g | 1 | ng/g | 0.68-3.46 | | ng/g | 1 | ng/g | 0.007-0.007 |
| PCB 44 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.68-3.46 | | ng/g | 1 | ng/g | 0.007-0.007 |
| PCB 49 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.66-3.42 | | ng/g | 1 | ng/g | 0.009-0.01 |
| PCB 52 | ng/g lipid | 0.8 | ng/g | 1 | ng/g | 0.68-3.48 | | ng/g | 1 | ng/g | 0.014-0.015 |
| PCB 66 | ng/g lipid | 0.8 | ng/g | 1 | ng/g | 0.67-3.45 | | ng/g | 1 | ng/g | 0.017-0.018 |
| PCB 74 | ng/g lipid | 0.8 | ng/g | 1 | ng/g | 0.73-3.76 | | ng/g | 1 | ng/g | 0.011-0.012 |
| PCB 87 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.68-3.49 | | ng/g | 1 | ng/g | 0.011-0.012 |
| PCB 99 | ng/g lipid | 0.6 | ng/g | 1 | ng/g | 0.67-3.44 | | ng/g | 1 | ng/g | 0.034-0.036 |
| PCB 101 | ng/g lipid | 0.6 | ng/g | 1 | ng/g | 0.67-3.43 | | ng/g | 1 | ng/g | 0.020-0.022 |
| PCB 105 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.67-3.44 | | ng/g | 1 | ng/g | 0.016-0.017 |
| PCB 110 | ng/g lipid | 0.8 | ng/g | 1 | ng/g | 0.66-3.41 | | ng/g | 1 | ng/g | 0.023-0.024 |
| PCB 114 |  | \* | ng/g | 1 | ng/g | 0.67-3.46 | | ng/g | 1 | ng/g | 0.0018-0.0019 |
| PCB 118 | ng/g lipid | 0.6 | ng/g | 1 | ng/g | 0.67-3.48 | | ng/g | 1 | ng/g | 0.057-0.060 |
| PCB 128 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.67-3.47 | | ng/g | 1 | ng/g | 0.015-0.016 |
| PCB 138-158 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.67-3.47 | | ng/g | 1 | ng/g | 0.019-0.020 |
| PCB 146 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.73-3.74 | | ng/g | 1 | ng/g | 0.019-0.020 |
| PCB 149 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.66-3.41 | | ng/g | 1 | ng/g | 0.019-0.020 |
| PCB 151 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.66-3.40 | | ng/g | 1 | ng/g | 0.0117-0.012 |
| PCB 153 | ng/g lipid | 1.1 | ng/g | 1 | ng/g | 1.37-7.05 | | ng/g | 1 | ng/g | 0.031-0.033 |
| PCB 154 |  | \* | ng/g | 1 | ng/g | 0.67-3.43 | | ng/g | 1 | ng/g | 0.031-0.033 |
| PCB 156 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.66-3.42 | | ng/g | 1 | ng/g | 0.0047-0.005 |
| PCB 157 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.67-3.45 | | ng/g | 1 | ng/g | 0.003-0.004 |
| PCB 158 |  | \* | ng/g | 1 | ng/g | 0.66-3.38 | | ng/g | 1 | ng/g | 0.0040-0.0042 |
| PCB 167 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.88-4.54 | | ng/g | 1 | ng/g | 0.0051-0.0054 |
| PCB 170 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.66-3.44 | | ng/g | 1 | ng/g | 0.018 – 0.019 |
| PCB 172 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.40-2.07 | | ng/g | 1 | ng/g | 0.020 – 0.021 |
| PCB 177 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.51-2.64 | | ng/g | 1 | ng/g | 0.008 – 0.009 |
| PCB 178 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.22-1.15 | | ng/g | 1 | ng/g | 0.0066 – 0.0070 |
| PCB 183 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.65-3.37 | | ng/g | 1 | ng/g | 0.0089 – 0.0094 |
| PCB 180 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 1.87-9.63 | | ng/g | 1 | ng/g | 0.0089 – 0.0094 |
| PCB 187 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.67-3.45 | | ng/g | 1 | ng/g | 0.045-0.047 |
| PCB 189 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.42-2.18 | | ng/g | 1 | ng/g | 0.0014-0.00144 |
| PCB 194 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.73-3.76 | | ng/g | 1 | ng/g | 0.0088-0.0093 |
| PCB 195 | ng/g lipid | 0.7 | ng/g | 1 | ng/g | 0.67-3.45 | | ng/g | 1 | ng/g | 0.0030-0.0032 |
| PCB 196-203 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 1.39-7.15 | | ng/g | 1 | ng/g | 0.0089 – 0.0094 |
| PCB 199 | ng/g lipid | 0.4 | ng/g | 1 | ng/g | 0.57-2.95 | | ng/g | 1 | ng/g | 0.0079-0.0082 |
| PCB 201 |  | \* | ng/g | 1 | ng/g | 0.68-3.49 | | ng/g | 1 | ng/g | 0.0010-0.0011 |
| PCB 202 |  | \* | ng/g | 1 | ng/g | 0.56-2.88 | | ng/g | 1 | ng/g | 0.007-0.008 |
| PCB 206 | ng/g lipid | 0.7 | ng/g | 1 | ng/g | 0.65-3.37 | | ng/g | 1 | ng/g | 0.0082-0.0087 |
| PCB 207 |  | \* | ng/g | 1 | ng/g | 0.43-2.22 | | ng/g | 1 | ng/g | 0.0028-0.0030 |
| PCB 208 |  | \* | ng/g | 1 | ng/g | 0.68-3.52 | | ng/g | 1 | ng/g | 0.005-0.006 |
| PCB 209 | ng/g lipid | 0.7 | ng/g | 1 | ng/g | 0.67-3.47 | | ng/g | 1 | ng/g | 0.0079-0.0084 |

1 Centers for Disease Control and Prevention (CDC). Fourth Report on Human Exposure to Environmental Chemicals, Updated Tables, March 2018.

2 For human specimens. Agency for Toxic Substances and Disease Registry (ATSDR). 2003. Toxicological profile for Selenium. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service. Available online: <http://www.atsdr.cdc.gov/ToxProfiles/TP.asp?id=153&tid=28> (accessed 1 April 2016)

3 For specimens from Sapelo Island dolphins LODs are the lowest detectable calibration point based on a 1 g sample. (National Institute of Standards and Technology). Values are wet mass.

4 For specimens from Biscayne Bay dolphins: LODs from Litz et al. (2007) and unpublished data. Values are wet mass.

5 PBDE LODs are the lowest detectable calibration point based on a 1 g sample from J. Kucklick (National Institute of Standards and Technology). Values are wet mass.

6 Fish samples were analyzed as follows: Pace Analytical, Green Bay, WI: metals (mercury, selenium), dioxins; National Institute of Standards and Technology, PCB congeners, chlorinated pesticides, brominated compounds. LODs are based on the mean blank plus 3 standard deviations based on a 3 g fish sample. Values are wet mass based. LODs from Pace Analytical were derived as follows: They were reported to the estimated detection limit (EDL), which compares the signal produced by the target analyte with that of the background noise. To be considered a positive response, the analyte signal has to be at least 2.5 times the noise level.  If it is not above the threshold, the noise is used to calculate the EDL. That is done by comparing the height of the noise with the height of the internal standard.  So if a noise height was, for example 100 and an internal standard height was 100000, the signal to noise would be 1000:1. The internal standard was added at a known amount, say 2 ng.  So the noise intensity would be equivalent to 2 pg.  If there was no peak present, the 2.5 factor would also be applied bringing the EDL to 5 pg/sample (assuming a response factor of 1 for the example analyte). Then the sample weight/volume is applied to convert that amount to a concentration.  The recovery does not directly come into play. A lower recovery would give you a lower response for the given internal standard, so it impacts the result.  However, the percent recovery is not used in the calculation.

7Data from J. Reiner. National Institute of Standards and Technology. LOD represents the lowest detectable calibrant adjusted for an average sample size of 1 mL of dolphin plasma.

8NA= not available

\* Not analyzed

Supplemental Table 2. Whole blood (metals) or serum concentrations from population categories in NHANES (CDC 2018). Values are ng/g lipid unless otherwise specified. The first listed number in each cell is the 50th percentile (95% confidence interval), the second is the 95th percentile (95% confidence interval).

|  |  |  |  |
| --- | --- | --- | --- |
| **Analyte** | **NHANES Population Category** | | |
| **Total** | **Men** | **Women** |
| **Metals (Survey years 2009-2010) and Selenium (Survey years 2011-2012)** | | | |
| Cadmium (ug/L) | .279(.267-.292)  1.50(1.30-1.70) | .255(.238-.274)  1.48(1.20-1.70) | .304(.289-.320)  1.53(1.30-1.70) |
| Lead (ug/dL) | .930(0.88–0.98)  3.16(2.77–3.68) | 1.07(1.01-1.14)  3.68(3.18-4.22) | .842(.796-.890)  2.59(2.32-2.94) |
| Mercury (ug/L) | .703(.617-.801)  4.40(3.50-5.71) | .712(.623-.815)  4.94(3.50-6.79) | .694(.609-.791)  4.03(3.29-5.08) |
| Selenium (ug/L) | 127(124-130)  161(156-164) | 129(126-132)  163(155-167) | 125(122-129)  158(151-166) |
| **PBDEs (Survey years 2003-2004)** | | | |
| PBDE 17 | <LOD  <LOD | <LOD  <LOD | <LOD  <LOD |
| PBDE 28 | 1.10(1.00-1.30)  8.00(5.40-11.3) | 1.10(1.00-1.30)  8.20(6.00-11.3) | 1.10(.900-1.40)  7.80(4.70-11.8) |
| PBDE 47 | 19.2(15.7-22.3)  163(108-240) | 19.2(15.8-24.0)  168(112-382) | 19.1(14.1-23.2)  155(102-239) |
| PBDE 66 | <LOD  1.30(1.00-2.10) | <LOD  1.40(1.00-2.60) | <LOD  1.10(<LOD-2.20) |
| PBDE 85 | <LOD  4.10(2.80-6.30) | <LOD  4.80(3.10-8.40) | <LOD  3.60(<LOD-5.20) |
| PBDE 99 | <LOD  42.2(33.3-54.8) | <LOD  45.5(33.8-57.3) | <LOD  41.2(22.9-60.3) |
| PBDE 100 | 3.60(3.42-4.51)  36.5(24.6-54.0) | 3.80(3.10-4.50)  44.1(21.9-61.5) | 3.30(2.80-4.10)  33.3(23.3-46.0) |
| PBDE 153 | 4.80(4.20-5.30)  65.7(54.9-88.4) | 5.50(4.80-6.70)  88.4(63.4-115) | 4.10(3.40-5.00)  54.5(34.6-62.9) |
| PBDE 154 | <LOD  4.20(2.80-5.40) | <LOD  4.30(3.20-6.50) | <LOD  4.20(3.50-5.70) |
| PBDE 183 | <LOD  <LOD | <LOD  1.70(<LOD-2.60) | <LOD  <LOD |
| **Chlorinated pesticides (Survey years 2003-2004)** | | | |
| Hexachlorobenzene | 14.9(14.2-15.7)  28.9(25.6-32.8) | 14.2(13.4-15.0)  26.9(21.0-25.6) | 15.7(15.1-16.4)  29.8(26.5-33.7) |
| Oxychlordane | 10.3(9.20-11.0)  37.7(34.8-43.8) | 9.90(8.30-11.2)  36.0(32.7-39.2) | 10.6(9.10-11.3)  41.9(36.3-45.5) |
| Trans-nonachlor | 14.8(13.5-17.0)  68.3(58.6-82.3) | 14.6(12.2-18.0)  68.6(56.0-93.8) | 15.0(13.8-16.3)  68.3(56.8-79.9) |
| *p,p* ’-DDD | \* | \* | \* |
| *p,p’-*DDE | 203(163-275)  1,860(1,400-2,380) | 200(164-262)  1,610(1,210-2,320) | 207(161-281)  2,010(1,500-2,450) |
| *o,p*‘-DDT | <LOD  <LOD | <LOD  <LOD | <LOD  <LOD |
| p, p’-DDT*p,p*‘*-DDT* | <LOD  19.5(15.1-27.5) | <LOD  15.2(11.8-26.9) | <LOD  21.0(18.0-27.8) |
| Mirex | <LOD  13.2(7.90-29.6) | <LOD  15.5(9.70-24.4) | <LOD  11.6(<LOD-31.3) |
| **Dioxins and dioxin-like PCBs (pg/g lipid) (Survey years 2003-2004)** | | | |
| 1,2,3,4,6,7,8,-Hepta CDD | 24.9(22.8-26.9)  91.3(73.5-117) | 23.2(21.1-25.6)  85.0(65.8-113) | 26.3(24.4-28.3)  95.7(80.7-128) |
| 1,2,3,4,6,7,8-Hepta CDF | <LOD  18.7(16.5-24.2) | <LOD  23.9(18.3-30.9) | <LOD  16.0(14.3-18.4) |
| 1,2,3,4,7,8,9-Hepta CDF | <LOD  <LOD | <LOD  <LOD | <LOD  <LOD |
| 1,2,3,4,7,8-Hexa CDD | <LOD  <LOD | <LOD  <LOD | <LOD  <LOD |
| 1,2,3,4,7,8-Hexa CDF | <LOD  8.90(7.90-10.2) | <LOD  8.50(7.80-10.0) | <LOD  9.30(7.80-10.4) |
| 1,2,3,6,7,8-Hexa CDD | 20.0(17.8-22.9)  68.5(59.6-74.9) | 19.8(17.8-21.6)  70.2(57.5-9-88.7) | 20.5(17.8-24.6)  65.5(60.0-73.4) |
| 1,2,3,6,7,8-Hexa CDF | <LOD  8.80(LOD-9.80) | <LOD  9.10(7.90-10.8) | <LOD  8.50(<LOD-9.20) |
| 1,2,3,7,8,9-Hexa CDD | <LOD  <LOD | <LOD  <LOD | <LOD  <LOD |
| 1,2,3,7,8-Penta CDD | <LOD  11.0(9.90-12.2) | <LOD  11.0(9.60-12.7)\_ | <LOD  11.0(10.0-12.2) |
| 2,3,4,7,8-Penta CDF | <LOD  12.3(11.0-13.3) | <LOD  12.2(10.4-14.8) | <LOD  12.6(11.0-13.7) |
| OCDD | <LOD  767(645-913) | <LOD  668(501-856) | 238(225-248)  829(675-1020) |
| OCDF | <LOD  <LOD | <LOD  <LOD | <LOD  <LOD |
| **Dioxin-like PCBs (coplanar PCBs) (pg/g lipid) (Survey years 2003-2004)** | | | |
| PCB 77 | \* | \* | \* |
| PCB 81 | <LOD  13.4(<LOD-16.4) | <LOD  14.4(<LOD-17.9) | <LOD  <LOD |
| PCB 126 | 14.7(14.9-17.9)  68.6(58.1-84.4) | <LOD  51.5(46.5-60.5) | 15.7(<LOD-18.4)  82.5(63.0-109) |
| PCB 169 | <LOD  40.6(36.5-47.3) | <LOD  46.1(38.8-52.0) | <LOD  35.8(31.0-41.1) |
| **PFAS (ug/L) (Survey Years 2009-2010)** | | | |
| Et-PFOSA-AcOH | <LOD  .100(<LOD-.100) | <LOD  .100(<LOD-.100) | <LOD  .100(<LOD-.100) |
| Me-PFOSA-AcOH | .200(.200-2.00)  1.00(.900-1.00) | .200(.200-.200)  1.00(.800-1.10) | .200(.200-.200)  1.00(.800-1.00) |
| PFDeA | .300(.300-.300)  .900(.800-1.10) | .300(.300-.300)  .800(.600-1.20) | .300(.200-.300)  1.00(.800-1.10) |
| PFHxS | 1.70(1.50-1.90)  6.90(5.90-7.60) | 2.20(1.90-2.50)  7.80(6.50-9.90) | 1.30(1.20-1.40)  5.40(4.70-6.50) |
| PFNA | 1.23(1.07-1.31)  3.77(2.30-7.22) | 1.31(1.15-1.48)  4.10(2.21-12.2) | 1.15(.980-1.23)  3.53(2.30-6.15) |
| PFOA | 3.20(2.90-3.50)  7.50(6.20-9.70) | 3.70(3.40-4.00)  7.90(6.40-10.2) | 2.70(2.50-3.00)  6.90(5.80-8.40) |
| PFOS | 9.70(8.50-10.8)  32.0(22.6-48.5) | 11.8(10.6-12.9)  37.4(22.5-72.3) | 7.80(6.70-9.00)  28.8(22.3-34.1) |
| PFOSA | <LOD  <LOD | <LOD  <LOD | <LOD  <LOD |
| **PCBs (Survey years 2003-2004)** | | | |
| PCB 28 | 4.96(4.65-5.26)  11.3(10.7-11.8) | 4.86(4.45-5.20)  10.8(10.5-11.4) | 5.07(4.73-5.37)  11.6(10.7-13.1) |
| PCB 44 | 2.05(1.90-2.20)  5.70(5.40-6.10) | 2.12(2.00-2.30)  5.89(5.36-6.80) | 1.98(1.80-2.20)  5.60(5.00-6.20) |
| PCB 49 | 1.35(2.14-1.45)  3.53(3.33-3.80) | 1.40(1.30-1.50)  3.79(3.36-4.10 | 1.30(1.13-1.40)  3.39(3.02-3.79) |
| PCB 52 | 2.74(2.50-3.00)  7.60(7.01-8.00) | 2.80(2.55-3.20)  7.80(7.29-8.49) | 2.70(2.40-2.96)  7.15(6.56-8.10) |
| PCB 66 | 1.37(1.30-1.40)  4.10(3.90-4.55) | 1.30(1.20-1.38)  3.30(2.96-3.82) | 1.41(1.38-1.50)  5.08(4.10-5.46) |
| PCB 74 | 4.36(3.90-4.88)  22.3(19.70-25.5) | 3.26(3.30-4.00)  15.8(14.6-18.5) | 5.38(4.84-5.95)  27.4(22.9-29.6) |
| PCB 87 | .900(.800-.980)  2l70(2.40-3.03) | .900(.800-.970)  2.70(2.33-3.08) | .870(.780-1.00)  2.60(2.35-3.08) |
| PCB 99 | 3.79(3.43-4.10)  18.0(16.7-19.4) | 3.69(3.31-4.00)  16.8(12.9-19.0) | 3.90(3.43-4.70)  18.9(17.5-22.8) |
| PCB 101 | 1.70(1.50-1.80)  5.83(5.29-6.66) | 1.75(1.60-1.90)  6.00(5.35-6.75) | 1.61(1.41-1.82)  5.60(4.88-7.25) |
| PCB 105 | 1.09(1.75-2.20)  6.24(5.20-7.79) | .980(.850-1.08)  4.70(3.83-5.50) | 1.20(1.05-1.40)  7.70(6.00-9.55) |
| PCB 110 | 1.20(1.10-1.35)  4.42(3.88-4.95) | 1.30(1.19-1.40)  4.61(3.80-5.00) | 1.20(1.00-1.35)  4.40(3.57-5.54) |
| PCB 118 | 5.19(4.80-5.61)  31.3(28.2-36.6) | 4.71(4.16-5.06)  23.2(20.7-25.1) | 6.02(5.31-6.84)  37.8(31.3-45.0) |
| PCB 128 | <LOD  .600(.500-.700) | <LOD  .600(.420-.770) | <LOD  .630(.500-.800) |
| PCB 138+158 | 15.1(13.6-16.6)  75.3(69.0-81.8) | 14.4(12.9-15.8)  75.8(63.3-87.7) | 15.8(14.2-17.8)  72.5(68.4-80.9) |
| PCB 146 | 2.21(2.03-2.54)  11.7(10.2-13.3) | 2.10(1.90-2.50)  12.4(10.0-14.9) | 2.35(2.04-2.63)  11.3(9.95-13.2) |
| PCB 149 | .600(.550-.680)  1.90(1.68-2.20) | .650(.600-.700)  1.90(1.60-2.40) | .600(.500-.620)  1.90(1.69-2.20) |
| PCB 151 | <LOD  1.00(.840-1.30) | <LOD  1.10(.830-1.50) | <LOD  1.00(.830-1.20) |
| PCB 153 | 20.8(18.4-22.2)  97.1(88.8-111) | 19.7(17.7-21.2)  107(86.8-122) | 21.9(19.0-24.1)  93.3(83.8-100) |
| PCB 154 | \* | \* | \* |
| PCB 156 | 3.29(2.36-2.74)  15.3(13.8-17.5) | 3.10(2.80-3.80)  17.1(114.7-19.3) | 3.42(2.80-4.10)  14.1(12.7-16.8) |
| PCB 157 | .800(.700-.940)  3.80(3.36-4.30) | .750(.700-.900)  4.00(3.57-4.87) | .890(.700-1.00)  3.40(3.20-3.93) |
| PCB 158 | With congener 138 | With congener 138 | With congener 138 |
| PCB 167 | .700(.560-.800)  4.10(3.80-4.47) | .500(.440-.600)  3.80(3.50-4.70) | .880(.660-1.06)  4.30(3.80-4.70) |
| PCB 170 | 6.30(5.22-7.10)  28.2(25.8-29.8) | 6.40(5.61-7.68)  29.4(26.0-32.7) | 6.28(5.81-7.18)  26.1(24.0-29.8) |
| PCB 172 | .900(.800-1.00)  4.16(3.65-4.55) | .900(.800-1.01)  4.43(3.76-5.50) | .900(.800-1.03)  3.70(3.37-4.26) |
| PCB 177 | 1.30(1.20-1.40)  7.20(6.38-8.50) | 1.30(1.17-1.41)  7.82(6.22-9.50) | 1.30(1.18-1.49)  6.97(6.15-7.92) |
| PCB 178 | 1.20(1.10-1.30)  6.10(5.13-7.10) | 1.20(1.10-1.37)  6.40(5.30-7.70) | 1.20(1.10-1.30)  5.40(4.47-6.70) |
| §PCB 180 | 18.0(16.4-18.9)  81.5(75.8-89.9) | 18.5(15.8-21.3)  88.3(76.8-96.7) | 17.8(15.8-19.2)  74.3(64.8-87.6) |
| PCB 183 | 1.60(1.50-1.77)  7.90(7.50-8.74) | 1.54(1.40-1.77)  7.90(7.20-9.20) | 1.69(1.50-1.82)  7.90(7.31-9.24) |
| §PCB 187 | 4.60(4.20-5.23)  24.3(20.5-27.8) | 4.50(4.00-5.40)  25.1(20.4-30.9) | 4.67(4.10-5.30)  24.2(19.1-27.8) |
| PCB 189 | <LOD  1,47(1.10-2.18) | <LOD  1.54(1.20-2.23) | <LOD  1.39(.890-2.18) |
| §PCB 194 | 4.19(3.55-4.70)  19.1(17.6-20.8) | 4.47(3.55-5.20)  21.8(19.8-25.6) | 4.00(3.39-4.49)  16.6(13.7-18.6) |
| PCB 195 | .900(<LOD-1.01)  4.51(3.90-5.18) | .800(<LOD-1.00)  4.60(3.82-5.40) | .970(<LOD-1.10)  4.50(3.57-5.25) |
| §PCB 196 | 3.40(3.01-3.80)  15.0(13.2-17.4) | 3.42(3.07-3.98)  16.3(13.7-23.1) | 3.32(2.83-3.80)  13.4(12.8-14.9) |
| §PCB 199 | 3.80(3.23-4.26)  18.9(17.9-21.3) | 3.95(3.30-4.67)  22.1(18.1-27.4) | 3.70(3.20-4.00)  17.0(15.7-18.9) |
| §PCB 201 | \* | \* | \* |
| §PCB 202 | \* | \* | \* |
| §PCB 206 | 2.34(2.00-2.60)  13.7(11.5-15.6) | 2.30(1.90-2.70)  13.8(20.8-25.7) | 2.34(1.95-2.78)  13.6(11.2-16.5) |
| §PCB 207 | \* | \* | \* |
| §PCB 208 | \* | \* | \* |
| §PCB 209 | 1.18(1.00-1.48)  11.1(9.00-15.7) | 1.15(1.00-1.50)  9.10(7.09-13.0) | 1.20(1.00-1.50)  13.9(10.0-18.7) |

\* Not analyzed