**Supplemental Table 1.** Reference range and quartile cut-offs for logistic regression models (µg/L plasma)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Metal | Ref. Range (RR) | #<RR | # within RR | #>RR | Upper quartile  cut-off | Lower quartile  cut-off |
| Al | ≤6 2 | N/A | N/A | 83 | 27.2 | N/A |
| Sb | <1 3 | 0 | 1 | 356 | 6.7 | N/A |
| As | <5 3 | 0 | 350 | 7 | 1.1 | N/A |
| B | <100 2 | 0 | 0 | 357 | 23.5 | 13.5 |
| Ba | <10 3 | 0 | 249 | 108 | N/A | N/A |
| Cd | <1 3 | 0 | 287 | 70 | N/A | N/A |
| Co | ≤0.9 2 | 0 | 354 | 3 | 0.41 | 0.24 |
| Cr | <1 3 | 0 | 242 | 115 | N/A | N/A |
| Cs | <3 3 | 0 | 355 | 2 | 1.6 |  |
| Cu | 750-1450 2 | 356 | 1 | 0 | 289.8 | 197.8 |
| Pb1 | <50 4 | 0 | 339 | 17 | 37 |  |
| Mn | <24 2 | 0 | 353 | 4 | 6.6 | 2.7 |
| Hg | <6 3 | 0 | 357 | 0 | 0.3 |  |
| Mo | 0.3-2 2 | 9 | 327 | 21 | 1.3 |  |
| Ni | <2 2 | 0 | 245 | 112 | N/A | N/A |
| Rb | 100-500 3 | 1 | 17 | 339 | 1325.7 |  |
| Se | 70-150 3 | 353 | 3 | 1 | 47.9 | 28.6 |
| Sr | <50 3 | 0 | 312 | 45 | N/A | N/A |
| Ti | ≤1 2 | 0 | 0 | 357 | 227.4 |  |
| Zn | 660-1100 2 | 59 | 122 | 176 | 1100 5 | 660 5 |

1-Measured in whole blood

2- Source: Mayo clinic

3- Source: NMS labs

4- Source: U.S. CDC

5- RR cut-offs used instead of quartiles