

**表 1: Demographic characteristics**

|                          | Woman with osteoporosis medication |        |        |         |        |        | Woman without osteoporosis medication |        |        |         |        |        | All women |        |        |         |        | Men    |     |        |        |         |        |        |
|--------------------------|------------------------------------|--------|--------|---------|--------|--------|---------------------------------------|--------|--------|---------|--------|--------|-----------|--------|--------|---------|--------|--------|-----|--------|--------|---------|--------|--------|
|                          | n                                  | median | min    | max     | mean   | SD     | n                                     | median | min    | max     | mean   | SD     | n         | median | min    | max     | mean   | SD     | n   | median | min    | max     | mean   | SD     |
| Age (years)              | 40                                 | 73.5   | 49     | 85      | 73.1   | 7.5    | 222                                   | 64.0   | 42     | 96      | 65.1   | 11.9   | 262       | 66.0   | 42     | 96      | 66.3   | 11.7   | 227 | 68.0   | 42     | 93      | 66.9   | 11.8   |
| BMI (kg/m <sup>2</sup> ) | 40                                 | 23.5   | 16.7   | 30.1    | 23.0   | 3.3    | 214                                   | 22.7   | 15.5   | 34.7    | 23.1   | 3.7    | 254       | 22.8   | 15.5   | 34.7    | 23.1   | 3.7    | 221 | 23.7   | 13.8   | 34.4    | 23.8   | 3.1    |
| BMD (g/cm <sup>2</sup> ) | 38                                 | 0.34   | 0.19   | 0.50    | 0.35   | 0.08   | 186                                   | 0.45   | 0.21   | 0.93    | 0.47   | 0.14   | 224       | 0.44   | 0.19   | 0.93    | 0.45   | 0.14   | 172 | 0.64   | 0.34   | 1.09    | 0.64   | 0.13   |
| Z-score (SD)             | 38                                 | 0.01   | -2.56  | 6.10    | 0.19   | 1.54   | 186                                   | 0.60   | -3.18  | 7.00    | 0.60   | 1.58   | 224       | 0.51   | -3.18  | 7.00    | 0.53   | 1.57   | 172 | 0.70   | -3.80  | 7.40    | 0.68   | 1.77   |
| T score (%)              | 38                                 | 65.0   | 39.0   | 99.0    | 65.7   | 12.9   | 186                                   | 80.0   | 44.0   | 128.0   | 81.2   | 18.5   | 224       | 77.0   | 39.0   | 128.0   | 78.5   | 18.6   | 172 | 95.5   | 58.0   | 139.0   | 94.2   | 13.3   |
| Lipid (%)                | 34                                 | 0.31   | 0.24   | 0.48    | 0.33   | 0.07   | 179                                   | 0.31   | 0.21   | 0.49    | 0.33   | 0.06   | 213       | 0.31   | 0.21   | 0.49    | 0.33   | 0.06   | 170 | 0.30   | 0.20   | 0.49    | 0.30   | 0.05   |
| Congeners (pg/g lipid)   |                                    |        |        |         |        |        |                                       |        |        |         |        |        |           |        |        |         |        |        |     |        |        |         |        |        |
| 2,3,7,8-TCDD             | 34                                 | 1.79   | 0.25   | 4.01    | 1.95   | 0.78   | 179                                   | 1.66   | 0.25   | 6.30    | 1.67   | 1.00   | 213       | 1.71   | 0.25   | 6.30    | 1.71   | 0.97   | 170 | 1.62   | 0.25   | 4.22    | 1.60   | 1.00   |
| 1,2,3,7,8-PeCDD          | 34                                 | 10.39  | 4.69   | 31.92   | 10.97  | 5.06   | 179                                   | 8.38   | 1.61   | 47.61   | 9.87   | 6.24   | 213       | 8.76   | 1.61   | 47.61   | 10.05  | 6.07   | 170 | 7.47   | 1.49   | 23.85   | 8.29   | 4.31   |
| 1,2,3,4,7,8-HxCDD        | 34                                 | 2.71   | 0.50   | 6.57    | 3.08   | 1.68   | 179                                   | 2.76   | 0.50   | 10.00   | 2.88   | 1.96   | 213       | 2.76   | 0.50   | 10.00   | 2.91   | 1.92   | 170 | 2.43   | 0.50   | 14.05   | 2.36   | 1.92   |
| 1,2,3,6,7,8-HxCDD        | 34                                 | 26.93  | 10.82  | 176.21  | 41.11  | 37.17  | 179                                   | 29.69  | 7.02   | 266.59  | 41.76  | 38.62  | 213       | 29.28  | 7.02   | 266.59  | 41.66  | 38.31  | 170 | 22.23  | 2.46   | 173.20  | 30.19  | 27.42  |
| 1,2,3,7,8,9-HxCDD        | 34                                 | 4.05   | 0.50   | 25.84   | 4.95   | 4.90   | 179                                   | 3.50   | 0.50   | 18.95   | 4.35   | 3.34   | 213       | 3.51   | 0.50   | 25.84   | 4.45   | 3.63   | 170 | 2.87   | 0.50   | 23.80   | 3.15   | 2.74   |
| 1,2,3,4,6,7,8-HpCDD      | 34                                 | 37.76  | 12.45  | 171.13  | 47.70  | 35.09  | 179                                   | 34.03  | 13.29  | 624.05  | 44.12  | 53.58  | 213       | 34.63  | 12.45  | 624.05  | 44.69  | 51.02  | 170 | 27.75  | 9.01   | 268.54  | 34.92  | 25.63  |
| OCDD                     | 34                                 | 660.24 | 232.47 | 4078.94 | 846.89 | 716.60 | 179                                   | 598.79 | 197.90 | 4926.46 | 716.24 | 532.67 | 213       | 600.45 | 197.90 | 4926.46 | 737.09 | 566.10 | 170 | 516.73 | 151.75 | 2881.27 | 639.50 | 402.00 |
| 2,3,7,8-TCDF             | 34                                 | 1.37   | 0.25   | 4.91    | 1.68   | 1.38   | 179                                   | 1.11   | 0.25   | 9.48    | 1.56   | 1.74   | 213       | 1.16   | 0.25   | 9.48    | 1.58   | 1.69   | 170 | 1.27   | 0.25   | 12.64   | 1.70   | 2.08   |
| 1,2,3,7,8-PeCDF          | 34                                 | 1.19   | 0.25   | 2.77    | 1.16   | 0.83   | 179                                   | 0.25   | 0.25   | 6.44    | 0.81   | 0.97   | 213       | 0.25   | 0.25   | 6.44    | 0.87   | 0.96   | 170 | 0.25   | 0.25   | 10.86   | 1.01   | 1.23   |
| 2,3,4,7,8-PeCDF          | 34                                 | 51.73  | 9.29   | 969.49  | 142.61 | 220.15 | 179                                   | 33.29  | 4.56   | 1494.28 | 126.97 | 216.55 | 213       | 35.63  | 4.56   | 1494.28 | 129.47 | 216.68 | 170 | 23.27  | 2.80   | 673.25  | 57.77  | 91.30  |
| 1,2,3,4,7,8-HxCDF        | 34                                 | 9.08   | 0.50   | 324.52  | 33.25  | 63.90  | 179                                   | 7.05   | 0.50   | 487.60  | 27.22  | 55.15  | 213       | 7.49   | 0.50   | 487.60  | 28.19  | 56.52  | 170 | 4.24   | 0.50   | 186.79  | 10.69  | 22.60  |
| 1,2,3,6,7,8-HxCDF        | 34                                 | 9.02   | 2.72   | 136.10  | 16.14  | 24.50  | 179                                   | 6.25   | 0.50   | 198.56  | 12.48  | 19.36  | 213       | 6.45   | 0.50   | 198.56  | 13.06  | 20.25  | 170 | 5.02   | 0.50   | 77.30   | 7.33   | 9.03   |
| 2,3,4,6,7,8-HxCDF        | 34                                 | 0.50   | 0.50   | 4.15    | 1.00   | 1.05   | 179                                   | 0.50   | 0.50   | 9.62    | 0.77   | 0.99   | 213       | 0.50   | 0.50   | 9.62    | 0.81   | 1.00   | 170 | 0.50   | 0.50   | 7.03    | 0.89   | 1.03   |
| 1,2,3,7,8,9-HxCDF        | 34                                 | 0.50   | 0.50   | 0.50    | 0.50   | 0.00   | 179                                   | 0.50   | 0.50   | 0.50    | 0.50   | 0.00   | 213       | 0.50   | 0.50   | 0.50    | 0.50   | 0.00   | 170 | 0.50   | 0.50   | 0.50    | 0.50   | 0.00   |
| 1,2,3,4,6,7,8-HpCDF      | 34                                 | 1.25   | 0.50   | 12.59   | 2.44   | 3.07   | 179                                   | 0.50   | 0.50   | 39.13   | 2.11   | 3.88   | 213       | 0.50   | 0.50   | 39.13   | 2.16   | 3.76   | 170 | 0.50   | 0.50   | 24.61   | 1.87   | 2.72   |
| 1,2,3,4,7,8,9-HpCDF      | 34                                 | 0.50   | 0.50   | 0.50    | 0.50   | 0.00   | 179                                   | 0.50   | 0.50   | 3.32    | 0.52   | 0.21   | 213       | 0.50   | 0.50   | 3.32    | 0.51   | 0.19   | 170 | 0.50   | 0.50   | 0.50    | 0.50   | 0.00   |
| OCDF                     | 34                                 | 1.00   | 1.00   | 1.00    | 1.00   | 0.00   | 179                                   | 1.00   | 1.00   | 5.11    | 1.02   | 0.31   | 213       | 1.00   | 1.00   | 5.11    | 1.02   | 0.28   | 170 | 1.00   | 1.00   | 1.00    | 1.00   | 0.00   |
| 3,4,4',5'-TCB(#81)       | 34                                 | 2.50   | 2.50   | 16.67   | 3.64   | 3.30   | 179                                   | 2.50   | 2.50   | 15.09   | 2.83   | 1.80   | 213       | 2.50   | 2.50   | 16.67   | 2.96   | 2.12   | 170 | 2.50   | 2.50   | 30.80   | 3.70   | 4.14   |
| 3,3',4,4'-TCB(#77)       | 34                                 | 2.50   | 2.50   | 31.85   | 7.06   | 7.15   | 179                                   | 2.50   | 2.50   | 25.27   | 4.71   | 4.84   | 213       | 2.50   | 2.50   | 31.85   | 5.09   | 5.33   | 170 | 2.50   | 2.50   | 38.29   | 6.39   | 6.39   |
| 3,3',4,4',5'-PeCB(#126)  | 34                                 | 123.59 | 34.17  | 520.99  | 145.92 | 109.52 | 179                                   | 82.59  | 2.50   | 491.57  | 101.95 | 74.20  | 213       | 85.95  | 2.50   | 520.99  | 108.96 | 82.16  | 170 | 98.91  | 2.50   | 684.12  | 124.33 | 110.48 |

**表 2: Z スコアと BMI の関連 (居住地で調整)**

|  | Regression Coefficient (b) |         |           |           | P       |
|--|----------------------------|---------|-----------|-----------|---------|
|  | b                          | SE of b | lower 95% | upper 95% |         |
| Women without<br>osteoporosis medication | 0.139                      | 0.029   | 0.081     | 0.197     | <0.0001 |
| All women                                | 0.151                      | 0.027   | 0.098     | 0.204     | <0.0001 |
| Men                                      | 0.132                      | 0.041   | 0.051     | 0.213     | 0.001   |

**表3: Z スコアとダイオキシン類濃度の関連 (BMI と居住地で調整)**

| log10 congeners (pg/g lipid)                 | Regression Coefficient (b) |                |                  |                  |          |
|--|----------------------------|----------------|------------------|------------------|----------|
|  | b                          | SE of b        | lower 95%        | upper 95%        | P        |
| <b>Women without osteoporosis medication</b> |                            |                |                  |                  |          |
| 2,3,7,8-TCDD                                 | 0.247                      | 0.336          | -0.418           | 0.911            | 0.46     |
| 1,2,3,7,8-PeCDD                              | 0.022                      | 0.538          | -1.041           | 1.085            | 0.97     |
| 1,2,3,4,7,8-HxCDD                            | -0.587                     | 0.310          | -1.199           | 0.025            | 0.06     |
| 1,2,3,6,7,8-HxCDD                            | -0.560                     | 0.434          | -1.418           | 0.297            | 0.20     |
| 1,2,3,7,8,9-HxCDD                            | -0.549                     | 0.341          | -1.223           | 0.125            | 0.11     |
| 1,2,3,4,6,7,8-HpCDD                          | -1.129                     | 0.478          | -2.074           | -0.184           | 0.020    |
| OCDD   | -0.799                     | 0.537          | -1.861           | 0.263            | 0.14     |
| 2,3,7,8-TCDF                                 | 0.116                      | 0.246          | -0.371           | 0.602            | 0.64     |
| 2,3,4,7,8-PeCDF                              | 0.094                      | 0.212          | -0.324           | 0.513            | 0.66     |
| 1,2,3,4,7,8-HxCDF                            | 0.111                      | 0.198          | -0.280           | 0.503            | 0.57     |
| 1,2,3,6,7,8-HxCDF                            | 0.015                      | 0.301          | -0.580           | 0.609            | 0.96     |
| 3,3',4,4',5-PeCB(#126)                       | 0.387                      | 0.419          | -0.441           | 1.215            | 0.36     |
| 3,3',4,4',5,5'-HxCB(#169)                    | 0.450                      | 0.361          | -0.264           | 1.164            | 0.21     |
| <b>All women</b>                             |                            |                |                  |                  |          |
|  | <b>b</b>                   | <b>SE of b</b> | <b>lower 95%</b> | <b>upper 95%</b> | <b>P</b> |
| 2,3,7,8-TCDD                                 | 0.223                      | 0.319          | -0.407           | 0.852            | 0.49     |
| 1,2,3,7,8-PeCDD                              | 0.075                      | 0.493          | -0.898           | 1.049            | 0.88     |
| 1,2,3,4,7,8-HxCDD                            | -0.535                     | 0.285          | -1.098           | 0.028            | 0.06     |
| 1,2,3,6,7,8-HxCDD                            | -0.377                     | 0.387          | -1.141           | 0.386            | 0.33     |
| 1,2,3,7,8,9-HxCDD                            | -0.407                     | 0.299          | -0.996           | 0.183            | 0.18     |
| 1,2,3,4,6,7,8-HpCDD                          | -1.123                     | 0.431          | -1.974           | -0.272           | 0.010    |
| OCDD   | -0.841                     | 0.472          | -1.772           | 0.089            | 0.08     |
| 2,3,7,8-TCDF                                 | 0.258                      | 0.222          | -0.181           | 0.696            | 0.25     |
| 2,3,4,7,8-PeCDF                              | 0.141                      | 0.191          | -0.235           | 0.517            | 0.46     |
| 1,2,3,4,7,8-HxCDF                            | 0.178                      | 0.176          | -0.169           | 0.524            | 0.31     |
| 1,2,3,6,7,8-HxCDF                            | 0.109                      | 0.269          | -0.421           | 0.639            | 0.69     |
| 3,3',4,4',5-PeCB(#126)                       | 0.281                      | 0.382          | -0.473           | 1.035            | 0.46     |
| 3,3',4,4',5,5'-HxCB(#169)                    | 0.427                      | 0.328          | -0.220           | 1.074            | 0.19     |
| <b>Men</b>                                   |                            |                |                  |                  |          |
|  | <b>b</b>                   | <b>SE of b</b> | <b>lower 95%</b> | <b>upper 95%</b> | <b>P</b> |
| 2,3,7,8-TCDD                                 | 0.471                      | 0.361          | -0.244           | 1.185            | 0.19     |
| 1,2,3,7,8-PeCDD                              | 0.537                      | 0.601          | -0.653           | 1.726            | 0.37     |
| 1,2,3,4,7,8-HxCDD                            | 0.525                      | 0.355          | -0.178           | 1.228            | 0.14     |
| 1,2,3,6,7,8-HxCDD                            | -0.157                     | 0.529          | -1.205           | 0.890            | 0.77     |
| 1,2,3,7,8,9-HxCDD                            | 0.438                      | 0.371          | -0.295           | 1.172            | 0.24     |
| 1,2,3,4,6,7,8-HpCDD                          | 0.852                      | 0.608          | -0.351           | 2.055            | 0.16     |
| OCDD   | 0.723                      | 0.590          | -0.446           | 1.892            | 0.22     |
| 2,3,7,8-TCDF                                 | 0.522                      | 0.283          | -0.038           | 1.082            | 0.07     |
| 2,3,4,7,8-PeCDF                              | 0.047                      | 0.301          | -0.549           | 0.642            | 0.88     |
| 1,2,3,4,7,8-HxCDF                            | 0.047                      | 0.259          | -0.466           | 0.559            | 0.86     |
| 1,2,3,6,7,8-HxCDF                            | 0.142                      | 0.332          | -0.515           | 0.800            | 0.67     |
| 3,3',4,4',5-PeCB(#126)                       | 0.665                      | 0.383          | -0.092           | 1.423            | 0.08     |
| 3,3',4,4',5,5'-HxCB(#169)                    | 0.367                      | 0.451          | -0.525           | 1.259            | 0.42     |