SUPPLEMENTARY MATERIAL

to the article Distribution and bioavailability of mercury in the surface sediments of the Baltic Sea by Urszula Kwasigroch, Magdalena Beldowska, Agnieszka Jedruch and Katarzyna Łukawska-Matuszewska (corresponding author: U. Kwasigroch urszula.kwasigroch@gmail.com)

Figure A1 Water depth (m) of the Baltic Sea (digitised from Winterhalter et al., 1981) together with the sampling stations location
Figure A2  Sediments of the Baltic Sea (digitised from Winterhalter et al., 1981) together with the sampling stations location
Figure A3  Estimated distribution of (a) $\text{Hg}_{\text{ADS1}}$, (b) $\text{Hg}_{\text{ABS}}$, (c) $\text{Hg}_{\text{ADS2}}$, and (d) $\text{HgS}$ contribution (%) in the total mercury in the surface sediments of the Baltic Sea (interpolated from point data using an inverse distance weighted technique)
Figure A4  Conventional munitions (such as bombs, grenades, torpedoes and mines) dumped in the sea as a source of Hg to the environment including benthic organisms (ospar.org)
Table A1  Location of the sediment sampling station and the sampling method used

| No. | Region               | Longitude (E) | Latitude (N) | Water depth (m) | Sampling tool       |
|-----|----------------------|---------------|--------------|-----------------|---------------------|
| 1   | Arkona Basin         | 13.655583     | 54.884900    | 45              | van Veen grab       |
| 2   | Arkona Basin         | 13.652250     | 54.883750    | 45              | van Veen grab       |
| 3   | Belt Sea             | 10.185917     | 54.806650    | 29              | van Veen grab       |
| 4   | Belt Sea             | 10.188267     | 54.806283    | 34              | van Veen grab       |
| 5   | Belt Sea             | 10.146600     | 54.824183    | 33              | van Veen grab       |
| 6   | Belt Sea             | 10.331233     | 54.460717    | 12              | van Veen grab       |
| 7   | Belt Sea             | 10.313400     | 54.472917    | 18              | van Veen grab       |
| 8   | Belt Sea             | 10.310333     | 54.476000    | 18.5            | van Veen grab       |
| 9   | Belt Sea             | 10.336933     | 54.453083    | 6.5             | van Veen grab       |
| 10  | Belt Sea             | 10.334046     | 54.457746    | 7               | box corer           |
| 11  | Belt Sea             | 10.334041     | 54.457810    | 7               | box corer           |
| 12  | Belt Sea             | 10.330061     | 54.458956    | 7               | box corer           |
| 13  | Belt Sea             | 10.329928     | 54.458998    | 7               | box corer           |
| 14  | Belt Sea             | 10.331839     | 54.460525    | 12              | box corer           |
| 15  | Belt Sea             | 10.310281     | 54.476062    | 7               | box corer           |
| 16  | Belt Sea             | 10.886733     | 54.067017    | 18              | van Veen grab       |
| 17  | Belt Sea             | 10.883067     | 54.062333    | 21              | van Veen grab       |
| 18  | Belt Sea             | 10.824583     | 54.041517    | 18              | van Veen grab       |
| 19  | Belt Sea             | 10.821783     | 54.046167    | 17              | van Veen grab       |
| 20  | Belt Sea             | 10.821750     | 54.042433    | 19              | van Veen grab       |
| 21  | Belt Sea             | 10.821750     | 54.042433    | 19              | van Veen grab       |
| 22  | Belt Sea             | 10.340200     | 54.454950    | 10              | van Veen grab       |
| 23  | Belt Sea             | 10.337333     | 54.472567    | 17              | van Veen grab       |
| 24  | Belt Sea             | 10.317533     | 54.461850    | 11              | van Veen grab       |
| 25  | Belt Sea             | 10.338233     | 54.463167    | 15              | van Veen grab       |
| 26  | Belt Sea             | 10.341583     | 54.460117    | 14              | van Veen grab       |
| 27  | Belt Sea             | 10.340717     | 54.460117    | 14              | van Veen grab       |
| 28  | Belt Sea             | 10.340883     | 54.460350    | 14              | van Veen grab       |
| 29  | Belt Sea             | 10.322750     | 54.472767    | 18              | van Veen grab       |
| 30  | Bornholm Basin       | 16.840967     | 54.600333    | 16              | van Veen grab       |
| 31  | Bornholm Basin       | 16.358367     | 54.447133    | 19              | van Veen grab       |
| 32  | Bornholm Basin       | 15.541383     | 54.192550    | 12.5            | van Veen grab       |
| 33  | Bornholm Basin       | 14.709817     | 54.044950    | 10.5            | van Veen grab       |
| 34  | Bornholm Basin       | 14.364100     | 53.793950    | 5               | van Veen grab       |
| 35  | Bornholm Basin       | 14.287250     | 53.955600    | 9               | van Veen grab       |
| 36  | Bornholm Basin       | 14.449517     | 54.082217    | 12.5            | van Veen grab       |
| 37  | Bornholm Basin       | 15.061217     | 54.649450    | 58              | van Veen grab       |
| 38  | Bornholm Basin       | 15.521533     | 55.302617    | 95              | van Veen grab       |
| 39  | Bornholm Basin       | 17.031100     | 55.178450    | 65              | van Veen grab       |
| 40  | Bornholm Basin       | 16.497700     | 55.253500    | 60              | van Veen grab       |
| 41  | Bornholm Basin       | 17.030067     | 55.181583    | 72              | box corer           |
| 42  | Bornholm Basin       | 16.784300     | 55.313133    | 70              | box corer           |
| 43  | Bornholm Basin       | 15.631417     | 55.358850    | 100             | van Veen grab       |
| 44  | Bornholm Basin       | 15.638850     | 55.360400    | 103             | van Veen grab       |
| 45  | Bothnian Sea         | 19.151183     | 60.183150    | 304             | van Veen grab       |
| 46  | Bothnian Sea         | 19.166550     | 61.983583    | 69.5            | van Veen grab       |
| 47  | Bothnian Sea         | 19.196083     | 62.759033    | 174             | van Veen grab       |
| 48  | Bothnian Sea         | 20.283450     | 63.317000    | 98              | van Veen grab       |
| 49  | Bothnian Sea         | 18.228983     | 61.184417    | 70.5            | van Veen grab       |
| 50  | Bothnian Sea         | 18.931800     | 60.541217    | 130             | van Veen grab       |
| 51  | Eastern Gotland Basin| 17.561750     | 54.787083    | 14              | van Veen grab       |
| 52  | Eastern Gotland Basin| 18.250717     | 55.148183    | 68              | van Veen grab       |
| 53  | Eastern Gotland Basin| 17.905950     | 55.247817    | 84              | box corer           |
| 54  | Eastern Gotland Basin| 18.819973     | 56.009467    |  box corer      |
| 55  | Eastern Gotland Basin| 18.842657     | 56.243083    | 100             | box corer           |
| 56  | Eastern Gotland Basin| 18.842657     | 56.243083    | 100             | box corer           |
| 57  | Eastern Gotland Basin| 19.036617     | 56.147205    | 128             | box corer           |
| 58  | Eastern Gotland Basin| 19.166400     | 56.082200    | 122             | van Veen grab       |
| 59  | Eastern Gotland Basin| 19.580483     | 56.633200    | 140             | van Veen grab       |
| 60  | Eastern Gotland Basin| 20.050333     | 57.333517    | 244             | GEMAX corer         |
| No. | Region                  | Longitude (E)  | Latitude (N)  | Water depth (m) | Sampling tool          |
|-----|------------------------|----------------|---------------|----------------|------------------------|
| 61  | Eastern Gotland Basin  | 19.900483      | 58.000400     | 200            | van Veen grab          |
| 62  | Eastern Gotland Basin  | 20.334083      | 58.441167     | 119            | GEMAX corer            |
| 63  | Eastern Gotland Basin  | 20.316200      | 58.884433     | 157.5          | van Veen grab          |
| 64  | Eastern Gotland Basin  | 18.367433      | 55.167733     | 76             | van Veen grab          |
| 65  | Gdansk Basin           | 18.963617      | 54.379017     | 16             | van Veen grab          |
| 66  | Gdansk Basin           | 18.770900      | 54.545850     | 48             | van Veen grab          |
| 67  | Gdansk Basin           | 18.751383      | 55.034667     | 97             | van Veen grab          |
| 68  | Gdansk Basin           | 19.328700      | 54.833883     | 105            | van Veen grab          |
| 69  | Gdansk Basin           | 19.169333      | 54.748550     | 101            | van Veen grab          |
| 70  | Gdansk Basin           | 19.231467      | 54.714000     | 89             | van Veen grab          |
| 71  | Gdansk Basin           | 18.698700      | 54.647483     | 35             | van Veen grab          |
| 72  | Gdansk Basin           | 18.669400      | 54.492033     | 25             | van Veen grab          |
| 73  | Gdansk Basin           | 19.137567      | 54.705065     | 97             | box corer              |
| 74  | Gdansk Basin           | 18.702817      | 54.646183     | 34             | box corer              |
| 75  | Gdansk Basin           | 18.691830      | 54.644200     | 37             | box corer              |
| 76  | Gdansk Basin           | 19.113083      | 54.499567     | 74             | box corer              |
| 77  | Gdansk Basin           | 18.598402      | 54.547908     | 12             | van Veen grab          |
| 78  | Gdansk Basin           | 19.111813      | 54.500030     | 65             | van Veen grab          |
| 79  | Gdansk Basin           | 18.999885      | 54.949642     | 100            | van Veen grab          |
| 80  | Gdansk Basin           | 18.957983      | 54.384917     | 16             | van Veen grab          |
| 81  | Gdansk Basin           | 19.027950      | 54.593000     | 21             | van Veen grab          |
| 82  | Gdansk Basin           | 18.891583      | 54.532817     | 68             | van Veen grab          |
| 83  | Gdansk Basin           | 18.698150      | 54.647633     | 36             | van Veen grab          |
| 84  | Gdansk Basin           | 18.732900      | 54.599817     | 48             | van Veen grab          |
| 85  | Gdansk Basin           | 19.319667      | 54.833250     | 113            | van Veen grab          |
| 86  | Gdansk Basin           | 18.591133      | 54.685592     | 12             | van Veen grab          |
| 87  | Gdansk Basin           | 18.360017      | 54.912717     | 23             | van Veen grab          |
| 88  | Western Gotland Basin  | 19.098667      | 58.784017     | 133            | van Veen grab          |
| 89  | Western Gotland Basin  | 18.252267      | 58.558083     | 280            | van Veen grab          |
| 90  | Western Gotland Basin  | 17.998217      | 57.999767     | 163            | van Veen grab          |
| 91  | Western Gotland Basin  | 17.665650      | 57.117617     | 106            | van Veen grab          |
Table A2  Concentration of total mercury $Hg_{TOT}$ (median and range) and the share of labile ($Hg_{ADS1}$, $Hg_{ABS}$, $Hg_{ADS2}$) and stable forms ($HgS$, $Hg_{RES}$) of Hg in the suspended particulate matter (SPM) from the different regions of the Baltic Sea

|                  | Belt Sea | Bornholm Basin | Gdansk Basin | Western Gotland Basin | Eastern Gotland Basin | Bothnian Sea |
|------------------|----------|----------------|--------------|------------------------|------------------------|--------------|
| **Sub-surface**  |          |                |              |                        |                        |              |
| $Hg_{TOT}$ (ng dm$^{-3}$) | 0.5 (0.2-0.7) | 0.6 (0.2-0.9) | 0.4 (0.2-2.1) | 0.1 (0.1-0.3) | 0.2 (0.1-0.3) | 0.3          |
| $Hg_{ADS1}$ (%)  | 85.3 (80.8-89.9) | 75.7 (61.3-86.8) | 83.8 (70.9-88.0) | 76.7 (68.1-89.8) | 83.6 (68.1-89.8) | 83.8          |
| $Hg_{ABS}$ (%)   | 12.1 (7.2-17.1) | 19.1 (9.4-35.0) | 14.3 (9.5-23.6) | 18.9 (5.4-29.5) | 10.7 (5.4-29.5) | 15.2          |
| $Hg_{ADS2}$ (%)  | 0.5 (0.5-0.6) | 1.0 (0.3-1.8) | 0.9 (0.1-7.4) | 2.3 (0.3-3.9) | 1.0 (0.3-3.9) | 0.2          |
| $HgS$ (%)        | 1.6 (1.5-1.7) | 1.8 (1.1-4.9) | 1.3 (0.4-2.4) | 1.4 (0.9-1.3) | 1.1 (0.9-1.3) | 0.7          |
| $Hg_{RES}$ (%)   | 0.4 (0.2-0.7) | 0.5 (0.2-1.2) | 0.4 (0.0-1.3) | 0.7 (0.2-0.6) | 0.5 (0.2-0.6) | 0.2          |
| **Near-bottom**  |          |                |              |                        |                        |              |
| $Hg_{TOT}$ (ng dm$^{-3}$) | 0.5 (0.2-0.7) | 0.3 (0.3-0.4) | 0.4 (0.1-0.9) | 0.1 (0.1-0.3) | 0.2 (0.1-0.3) | 0.1          |
| $Hg_{ADS1}$ (%)  | 75.6 (73.3-77.9) | 67.6 (66.0-69.2) | 73.4 (41.8-91.1) | 70.6 (53.1-88.1) | 79.3 (58.5-84.6) | 88.6          |
| $Hg_{ABS}$ (%)   | 20.5 (17.8-23.1) | 26.4 (22.3-30.7) | 16.5 (8.3-38.8) | 26.9 (9.9-43.8) | 18.9 (12.8-36.5) | 18.9          |
| $Hg_{ADS2}$ (%)  | 1.4 (1.3-1.4) | 2.1 (0.6-3.5) | 0.9 (0.2-3.3) | 0.5 (0.4-0.5) | 0.4 (0.2-0.8) | 0.6          |
| $HgS$ (%)        | 1.9 (1.5-2.3) | 2.6 (2.2-3.1) | 3.1 (0.4-16.7) | 2.0 (1.4-2.6) | 1.6 (1.2-4.0) | 0.7          |
| $Hg_{RES}$ (%)   | 0.7 (0.6-0.8) | 1.3 (0.5-2.1) | 0.2 (0.1-0.5) | 0.1 (0.1-0.1) | 0.2 (0.1-0.1) | 0.1          |
Table A3  Spearman’s correlation coefficients between parameters analysed in the study (values marked with * are not statistically significant at the p level of 0.05)

|        | HgTOT (ng g⁻¹) | HgADS1 (%) | HgABS (%) | HgADS2 (%) | HgS (%) | HgRES (%) | depth (m) | LOI (%) | FSF (%) | Eh (mV) |
|--------|----------------|------------|-----------|------------|---------|-----------|-----------|---------|---------|---------|
| HgTOT (ng g⁻¹) | -0.33 | 0.49 | -0.30 | -0.38 | -0.80 | 0.12* | 0.71 | 0.87 | -0.64 |
| HgADS1 (%) | -0.33 | 0.07* | -0.11* | -0.15* | 0.26 | -0.55 | -0.24* | -0.38 | 0.50 |
| HgABS (%) | 0.49 | 0.07* | -0.80 | -0.94 | -0.64 | -0.17* | 0.26* | 0.13* | -0.39 |
| HgADS2 (%) | -0.30 | -0.11* | -0.80 | 0.67 | 0.59 | 0.24 | -0.13* | 0.06* | 0.41 |
| HgS (%) | -0.38 | -0.15* | -0.94 | 0.67 | 0.49 | 0.21* | -0.14* | -0.01* | 0.26* |
| HgRES (%) | -0.80 | 0.26 | -0.64 | 0.59 | 0.49 | -0.16* | -0.60 | -0.53 | 0.75 |
| depth (m) | 0.12* | -0.55 | -0.17* | 0.24 | 0.21* | -0.16* | 0.38 | 0.48 | -0.48 |
| LOI (%) | 0.71 | -0.24* | 0.26* | -0.13* | -0.14* | -0.60 | 0.38 | 0.76 | -0.81 |
| FSF (%) | 0.87 | -0.38 | 0.13* | 0.06* | -0.01* | -0.53 | 0.48 | 0.76 | -0.50 |
| Eh (mV) | -0.64 | 0.50 | -0.39 | 0.41 | 0.26* | 0.75 | -0.48 | -0.81 | -0.50 |