**Supplementary Material**

1. **Monte Carlo simulations (MCS)**

**Table A1.** Probability density function models used in the MCS for DDTs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Basis** | **Variable** | **Function** | **Anderson-Darling** | **p-value** |
|  | Eggs Bird | Weibull | 0.229 | 0.682 |
| Lipid | Liver Fish | Weibull | 1.271 | 0.052 |
|  | Muscle Fish | Weibull | 3.500 | 0.014 |
|  | Soft whole body Molluscs | Weibull | 0.708 | 0.356 |
|  | Fat/Blubber Birds and mammals | Weibull | 1.676 | 0.000 |
|  | Liver Birds and mammals | Lognormal | 2.317 | 0.000 |
| Wet | Liver Fish | Normal | 2.976 | 0.000 |
|  | Muscle Arthropod fish and mammals | Lognormal | 1.481 | 0.000 |
|  | Blood (BC/BL/BS) mammal | Weibull | 0.209 | 0.852 |
|  | Tail Muscle/Roe Fish | Weibull | 2.326 | 0.000 |
|  | Pellets | Lognormal | 0.435 | 0.172 |

**Table A2.** Probability density function models used in the MCS for PCBs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Basis** | **Variable** | **Function** | **Anderson-Darling** | **p-value** |
| Lipid | Liver Fish | Normal | 0.352 | 0.471 |
| Muscle Fish | Lognormal | 0.548 | 0.080 |
| Soft whole body Molluscs | Weibull | 1.848 | 0.000 |
|  | Fat Birds | Weibull | 1.927 | 0.000 |
|  | Blubber Mammals | Weibull | 0.517 | 0.084 |
| Wet | Liver Bird set al  | Weibull | 0.539 | 0.070 |
|  | Muscle/Blood Mammals | Weibull | 0.486 | 0.420 |
|  | Muscle/Blood Fish | Normal | 7.077 | 0.000 |
|  | Soft whole body Molluscs | Lognormal | 0.678 | 0.029 |
|  | Pellets | Normal | 0.344 | 0.491 |

1. **Trend analysis**

**A. logDDTs (Wet basis), excluding blood fractions (N=55) for having extremely low concentrations**

**Table A3**. Model: Ordinary least squares (OLS), LogDDT x time. 3199 observations.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Model parameters** | **Coefficient** | **Standard error**  |  **t-ratio**  | **p-value**  |
| **Constant**  | 8.93 | 0.265 | 33.70 | << 0.05 |
| **DDT** | -0.00021 | 8.156 | -25.53 | << 0.05 |
| **Statistics** |  |  |  |  |
| **R2** | 0.169 |  |  |  |
| **F(1, 3197)**  | 651,9 | **P(F)** | << 0.05 |  |

 **B. LogDDTs (Lipid basis)**

**Table A4**. Model: Ordinary least squares (OLS), LogDDT x time. 5209 observations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Model parameters** | **Coefficient** | **Standard error**  |  **t-ratio**  | **p-value**  |
| **Constant**  | 12.1 | 0.211 | 57.24 | << 0.05 |
| **DDT** | -0.00018 | 6.21x10-6 | -29.36 | << 0.05 |
| **Statistics** |  |  |  |  |
| **R2** | 0.14 |  |  |  |
| **F(1, 3197)**  | 861.8 | **P(F)** | << 0.05 |  |

**C. LogPCBs (Wet basis)**

**Table A5.** Model: Ordinary least squares (OLS**)**, LogPCBs x time. 1429observations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Model parameters** | **Coefficient** | **Standard error**  |  **t-ratio**  | **p-value**  |
| **Constant**  | 24.3 | 0.75 | 32.52 | << 0.05 |
| **DDT** | -0.00056 | 2.1x10-6 | -26.85 | << 0.05 |
| **Statistics** |  |  |  |  |
| **R2** | 0.34 |  |  |  |
| **F(1, 3197)**  | 720.9 | **P(F)** | << 0.05 |  |

**D. LogPCBs (lipid basis)**

**Table A6**. Model: Ordinary least squares (OLS), LogPCBs x time. 1080 observations

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Model parameters** | **Coefficient** | **Standard error**  |  **t-ratio**  | **p-value**  |
| **Constant**  | 7.87 | 0.68 | 11.61 | << 0.05 |
| **DDT** | −5.91x10-5  | 2.0x10-5 | -2.97 | << 0.05 |
| **Statistics** |  |  |  |  |
| **R2** | 0.008 |  |  |  |
| **F(1, 3197)**  | 8.81 | **P(F)** | << 0.05 |  |

1. **Histograms of DDTs and PCBs**

Concentration of DDTs on both the wet an lipid basis show very skewed probability density functions (Figure A1), which become more symmetric when log-transformed, but not Normal. The presence of local modes in the histograms indicate the presence of different statistical populations, which is much clearer in the data reported as wet basis.

|  |  |  |
| --- | --- | --- |
|  | Untransformed concentrations | Log-transformed |
| Lipid basis |  |  |
| Wet basis |  |  |

**Figure A1**. Probability density function for *MDDT, all organisms, wet or lipid* and *Log (MDDT, all organisms, wet or lipid)*.

PCBs concentrations of both the wet an lipid basis concentrations show very skewed probability density functions (Figure A2), which become more symmetric when taking the logarithm. The presence of local modes in the histograms indicate the presence of different statistical populations, which is much more evident in the data reported as wet basis.

|  |  |  |
| --- | --- | --- |
|  | Untransformed concentrations | Log-transformed |
| Lipid basis |  |  |
| Wet basis |  |  |

 **Figure A2.** Probability density function for *MPCB, all organisms, wet or lipid* and Log (*MPCB, all organisms, wet or lipid*) as wet and lipid basis in marine organisms.

The probability density functions for the concentration of DDTs in marine plastic pellets in the different oceans/seas are positively skewed, becoming more symmetrical by log-transformation (Figure A3), though not Normal.

|  |
| --- |
|  |
|  |

**Figure A3**. Probability density function for Log (PCBs) in marine pellets (N=263)

The probability density functions for the concentration of PCBs in marine plastic pellets in different oceans/seas are positively skewed, becoming more symmetrical after taking the logarithm.

1. **Kruskkal-Wallis Test (Ddts in Different Matrices) – lipid base**

Kruskal-Wallis test

data: LnDDTs by Matrix\_DDT

Kruskal-Wallis chi-squared = 1399.1, df = 3, p-value < 2.2x10-6

Dunn post-hoc test

|  |  |  |
| --- | --- | --- |
| Variable | Mean | St. dev. |
| EG | 9.81 | 0.28 |
| LI | 6.78 | 1.01 |
| MU | 5.58 | 1.26 |
| SB | 3.82 | 0.92 |

1. **Kruskkal-Wallis test (ddts in different matrices) – wet base**

Kruskal-Wallis test

data: LnDDTs by Matrix\_DDT

Kruskal-Wallis chi-squared = 1680.6, df = 11, p-value < 2.2 x10-16

1. **K-W Test (Ddts In Fat and Blubber of Different Animal Groups)**

Kruskal-Wallis test

data: LnDDTs by Class\_DDT

Kruskal-Wallis chi-squared = 2.4058, df = 1, p-value = 0.12

1. **K-W TEST (DDTS IN LIVER OF DIFFERENT ANIMAL GROUPS)**

Kruskal-Wallis test

data: LnDDTs by Class\_DDT

Kruskal-Wallis chi-squared = 651.67, df = 2, p-value < 2.2 x10-16

1. **K-W TEST (DDTS IN MUSCLE, WHOLE BODY AND SOFT WHOLE PARTS OF DIFFERENT ANIMAL GROUPS)**

Kruskal-Wallis test

data: LnDDTs by Class\_DDT

Kruskal-Wallis chi-squared = 11.605, df = 2, p-value = 0.0030

1. **K-W TEST (DDTS IN MARINE PELLETS, STUDIED PER LOCATION – OCEAN/SEA)**

Kruskal-Wallis test

data: LnDDTs by Matrix\_DDT

Kruskal-Wallis chi-squared = 6.3478, df = 4, p-value = 0.175

1. **KRUSKAL-WALLIS TEST, FOLLOWED BY DUNN POST-HOC TEST (PCBS IN DIFFERENT MATRICES)**

Kruskal-Wallis test

data: LnPCB by Matrix\_PCB

Kruskal-Wallis chi-squared = 179.72, df = 2, p-value < 2.2 x10-16

1. **KRUSKAL-WALLIS TEST (PCBs IN ANIMAL GROUPS)**

Kruskal-Wallis test

data: LnPCB by Class\_PCB

Kruskal-Wallis chi-squared = 9.8773, df = 3, p-value = 0.019