**Supplementary Material**

**Gas/particle partitioning and particle size distribution of PCDD/Fs and PCBs in urban ambient air**

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**Tables:**

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| --- |
| **Table S1**Meteorological data monitored during sampling campaigns. Seasonal average ± SD were calculated. |
|  | **Winter** | **Spring** | **Summer** | **Autumn** |
| **Active****Sampling** | **A1** | **A2** | **A3** |  | **A4** | **A5** | **A6** |  | **A7** | **A8** | **A9** | **A10** | **A11** |  | **A12** | **A13** | **A14** | **A15** |  |
| Date | 28-1 | 4-2 | 13-2 | x̄ ± SD | 17-4 | 22-4 | 22-5 | x̄ ± SD | 26-6 | 3-7 | 10-7 | 17-7 | 24-7 | x̄ ± SD | 15-10 | 28-10 | 5-11 | 12-11 | x̄ ± SD |
| T low (ºC) | 5.4 | 8.7 | 9.7 | 7.9 ± 1.8 | 20.4 | 14.0 | 15.7 | 16.7 ± 2.7 | 24,3 | 28,4 | 27,6 | 26,3 | 28,8 | 27,1 ± 1,6 | 17,1 | 11,9 | 16,1 | 14,4 | 14,9 ± 2,0 |
| T top (ºC) | 7.6 | 10.5 | 11.1 | 9.7 ± 1.5 | 21.6 | 14.5 | 15.6 | 17.3 ± 3.1 | 23,9 | 28,3 | 27,7 | 26,3 | 29,0 | 27,1 ± 1,8 | 17,3 | 12,0 | 16,3 | 14,8 | 15,1 ± 2,0 |
| Wind directiona | SW | WNW | SSW | SSW | SW | NE | ENE | NE | NE | NE | NE | NE | SW | NE | SW | NNE | WSW | NE | NE |
| Wind speed (m/s) | 1.6 | 2.7 | 2.0 | 2.1 ± 0.5 | 2.9 | 4.2 | 3.6 | 3.6 ± 0.6 | 4,5 | 5,4 | 4,0 | 4,3 | 3,5 | 4,4 ± 0,6 | 1,7 | 3,9 | 2,8 | 5,4 | 3,5 ± 1,4 |
| Relative humidity (%) | 72 | 64 | 66 | 67 ± 4 | 44 | 42 | 46 | 44 ± 2 | 25 | 33 | 31 | 36 | 26 | 30 ± 4 | 72 | 56 | 71 | 62 | 65 ± 7 |
| Pressure (hPa) | 949 | 946 | 943 | 946 ± 2 | 941 | 941 | 939 | 940 ± 1 | 943 | 942 | 935 | 940 | 937 | 939 ± 3 | 944 | 942 | 942 | 944 | 943 ± 1 |
| Solar irradiance(W/m2) | 267 | 300 | 301 | 289 ± 16 | 533 | 531 | 509 | 524 ± 11 | 578 | 503 | 394 | 470 | 514 | 492 ± 60 | 318 | 317 | 300 | 192 | 282 ± 52 |

**a**1Wind direction refers to the most frequent direction during the sampling period.

|  |
| --- |
| **Table S2** |
| 13C-Labelled surrogate standards added to the samples before the extraction (LCS) and the instrumental analysis stages (ISS). |
| Compound | Sampling Standards(SS) | Stock Solution (LCS) | Internal Standard Spiking Solution (ISS) |
| PCDD/Fs | 2,3,7,8-[37Cl4]-TCDD a | EPA-1613LCS a | EPA-1613ISS a |
| non-ortho and mono- ortho PCBs | PCB-30 c and PCB-198 c | WP-LCS a | WP-ISS a |
| i-PCBs |  | EC-5411 b | EC-5415 b |

*a Wellington Labs (Canada), b Cambridge Isotope Labs (USA) and c Dr Ehrenstorfer GmbH trading houses.*

|  |
| --- |
| **Table S3**Gas chromatographic and mass spectrometric method conditions for PCDD/F and PCB instrumental analysis**.** |
| **HRGC** | **MS**  |
| Flow rate:1 mL/minInyector: 280ºC SplitlessOven: 100ºC (1 min) - 20ºC/min - 220ºC (1 min) - 3ºC/min -310ºC (10 min)  | Autospec Ultima (HRMS)Transfer line: 280ºCSource: 280ºCEI (35 eV) 10.000  |

|  |
| --- |
| **Table S4** |
| Pearson correlation matrix for concentrations of Ti-PCBs, Tmo-PCBs, Tno-PCBs, TPCBs, TPCDDs, TPCDFs and TPCDD/Fs (**PUF+TSP**) and meteorological variables |
|  | **Ti-PCB** | **Tmo-PCB** | **Tno-PCB** | **TPCB** | **TPCDD** | **TPCDF** | **TPCDD/F** | **T** | **W** | **H** | **P** | **S** |
| **Ti-PCB** | 1 |  |  |  |  |  |  |  |  |  |  |  |
| **Tmo-PCB** | 0,722\*\* | 1 |  |  |  |  |  |  |  |  |  |  |
| **Tno-PCB** | 0,497 | 0,406 | 1 |  |  |  |  |  |  |  |  |  |
| **TPCB** | 0,980\*\* | 0,846\*\* | 0,504 | 1 |  |  |  |  |  |  |  |  |
| **TPCDD** | -0,545 | -0,608\* | -0,482 | -0,597\* | 1 |  |  |  |  |  |  |  |
| **TPCDF** | -0,541 | -0,569\* | -0,613\* | -0,583\* | 0,957\*\* | 1 |  |  |  |  |  |  |
| **TPCDD/F** | -0,551 | -0,593\* | -0,564\* | -0,597\* | 0,985\*\* | 0,993\*\* | 1 |  |  |  |  |  |
| **T** | 0,648\* | 0,458 | 0,903\*\* | 0,635\* | -0,672\*\* | -0,758\*\* | -0,730\*\* | 1 |  |  |  |  |
| **W** | 0,508 | 0,632\* | 0,662\* | 0,576\* | -0,611\* | -0,609\* | -0,618\* | 0,545\* | 1 |  |  |  |
| **H** | -0,678\*\* | -0,717\*\* | -0,867\*\* | -0,732\*\* | 0,606\* | 0,729\*\* | 0,686\*\* | -0,832\*\* | -0,640\* | 1 |  |  |
| **P** | -0,695\* | -0,504 | -0,592\* | -0,683\* | 0,665\* | 0,754\* | 0,726\* | -0,725\* | -0,386 | 0,697\* | 1 |  |
| **S** | 0,543 | 0,702\* | 0,637\* | 0,623\* | -0,560\* | -0,635\* | -0,610\* | 0,641\* | 0,347 | -0,832\* | -0,525\* | 1 |

T = temperature; W = wind speed; H = relative humidity; P = atmospheric pressure; S= solar radiation ; **\*** (*p* < 0.05); **\*\*** (*p* < 0.01); (N = number of samples; PCDD/Fs: N = 14; PCBs: N = 13)

**Table S5**

Pearson correlation matrix for concentrations of Ti-PCBs, Tmo-PCBs, Tno-PCBs, TPCBs, TPCDDs, TPCDFs and TPCDD/Fs (**PUF**) and meteorological variables

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Ti-PCB** | **Tmo-PCB** | **Tno-PCB** | **TPCB** | **TPCDD** | **TPCDF** | **TPCDD/F** | **T** | **W** | **H** | **P** | **S** |
| **Ti-PCB** | 1 |  |  |  |  |  |  |  |  |  |  |  |
| **Tmo-PCB** | 0,723\*\* | 1 |  |  |  |  |  |  |  |  |  |  |
| **Tno-PCB** | 0,493 | 0,401 | 1 |  |  |  |  |  |  |  |  |  |
| **TPCB** | 0,980\*\* | 0,845\*\* | 0,499 | 1 |  |  |  |  |  |  |  |  |
| **TPCDD** | -0,313 | -0,270 | 0,095 | -0,318 | 1 |  |  |  |  |  |  |  |
| **TPCDF** | -0,274 | -0,220 | -0,352 | -0,276 | 0,806\*\* | 1 |  |  |  |  |  |  |
| **TPCDD/F** | -0,304 | -0,257 | -0,165 | -0,309 | 0,936\*\* | 0,963\*\* | 1 |  |  |  |  |  |
| **T** | 0,644\* | 0,453 | 0,903\*\* | 0,630\* | -0,107 | -0,423 | -0,299 | 1 |  |  |  |  |
| **W** | 0,507 | 0,632\* | 0,664\* | 0,574\* | -0,185 | -0,353 | -0,298 | 0,545\* | 1 |  |  |  |
| **H** | -0,673\* | -0,712\*\* | -0,867\*\* | -0,726\*\* | -0,048 | 0,269 | 0,140 | -0,832\*\* | -0,640\* | 1 |  |  |
| **P** | -0,692 | -0,500 | -0,590\* | -0,679\* | 0,153 | 0,370 | 0,290 | -0,725\*\* | -0,386 | 0,697\*\* | 1 |  |
| **S** | 0,542 | 0,700\*\* | 0,636\* | 0,621\* | 0,028 | -0,170 | -0,091 | 0,641\* | 0,347 | -0,832\*\* | -0,525\* | 1 |

T = temperature; W = wind speed; H = relative humidity; P = atmospheric pressure ; S= solar radiation ; **\*** (*p* < 0.05); **\*\*** (*p* < 0.01); (PCDD/Fs: N = 14; PCBs: N = 13)

**Table S6**

Pearson correlation matrix for concentrations of Ti-PCBs, Tmo-PCBs, Tno-PCBs, TPCBs, TPCDDs, TPCDFs and TPCDD/Fs (**TSP**) and meteorological variables.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Ti-PCB** | **Tmo-PCB** | **Tno-PCB** | **TPCB** | **TPCDD** | **TPCDF** | **TPCDD/F** | **T** | **W** | **H** | **P** | **S** |
| **Ti-PCB** | 1 |  |  |  |  |  |  |  |  |  |  |  |
| **Tmo-PCB** | 0,701\*\* | 1 |  |  |  |  |  |  |  |  |  |  |
| **Tno-PCB** | 0,240 | 0,168 | 1 |  |  |  |  |  |  |  |  |  |
| **TPCB** | 0,975\*\* | 0,842\*\* | 0,238 | 1 |  |  |  |  |  |  |  |  |
| **TPCDD** | 0,043 | -0,436 | -0,229 | -0,104 | 1 |  |  |  |  |  |  |  |
| **TPCDF** | 0,061 | -0,474 | -0,095 | -0,101 | 0,951\*\* | 1 |  |  |  |  |  |  |
| **TPCDD/F** | 0,055 | -0,464 | -0,154 | -0,103 | 0,983\*\* | 0,991\*\* | 1 |  |  |  |  |  |
| **T** | 0,047 | 0,375 | -0,053 | 0,152 | -0,750\*\* | -0,789\*\* | -0,783\*\* | 1 |  |  |  |  |
| **W** | 0,413 | 0,625\* | -0,088 | 0,507 | -0,621\* | -0,640\* | -0,639\* | 0,545\* | 1 |  |  |  |
| **H** | -0,013 | -0,534\* | 0,253 | -0,175 | 0,665\*\* | 0,799\*\* | 0,753\*\* | -0,832\*\* | -0,640 | 1 |  |  |
| **P** | 0,035 | -0,370 | -0,068 | -0,089 | 0,734\*\* | 0,794\*\* | 0,780\*\* | -0,725\*\* | -0,386 | 0,697\*\* | 1 |  |
| **S** | -0,387 | 0,235 | -0,220 | -0,220 | -0,646\*\* | -0,728\*\* | -0,703\*\* | 0,641\* | 0,347 | -0,832\*\* | -0,525\* | 1 |

T = temperature; W = wind speed; H = relative humidity; P = atmospheric pressure; S= solar radiation ; **\*** (*p* < 0.05); **\*\*** (*p* < 0.01); (PCDD/Fs: N = 15; PCBs: N = 15)

**Table S7**

Pearson correlation matrix for concentrations of Ti-PCBs, Tmo-PCBs, Tno-PCBs, TPCBs, TPCDDs, TPCDFs and TPCDD/Fs (**PM10**) and meteorological variables.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Ti-PCB** | **Tmo-PCB** | **Tno-PCB** | **TPCB** | **TPCDD** | **TPCDF** | **TPCDD/F** | **T** | **W** | **H** | **P** | **S** |
| **Ti-PCB** | 1 |  |  |  |  |  |  |  |  |  |  |   |
| **Tmo-PCB** | 0,836\*\* | 1 |  |  |  |  |  |  |  |  |  |   |
| **Tno-PCB** | 0,415 | 0,599\* | 1 |  |  |  |  |  |  |  |  |   |
| **TPCB** | 0,988\*\* | 0,911\*\* | 0,483 | 1 |  |  |  |  |  |  |  |   |
| **TPCDD** | 0,181 | -0,024 | 0,061 | 0,129 | 1 |  |  |  |  |  |  |   |
| **TPCDF** | 0,362 | 0,126 | 0,325 | 0,304 | 0,905\*\* | 1 |  |  |  |  |  |   |
| **TPCDD/F** | 0,297 | 0,068 | 0,225 | 0,240 | 0,965\*\* | 0,985\*\* | 1 |  |  |  |  |   |
| **T** | -0,086 | -0,028 | -0,198 | -0,073 | -0,759\*\* | -0,857\*\* | -0,837\*\* | 1 |  |  |  |   |
| **W** | 0,526 | 0,711\*\* | 0,204 | 0,596\* | -0,507 | -0,454 | -0,486 | 0,545\* | 1 |  |  |   |
| **H** | 0,161 | 0,002 | 0,411 | 0,122 | 0,662\* | 0,855\*\* | 0,797\*\* | -0,832\*\* | -0,640\* | 1 |  |   |
| **P** | 0,152 | -0,034 | 0,102 | 0,105 | 0,770 | 0,819\*\* | 0,818\*\* | -0,725\*\* | -0,386 | 0,697\*\* | 1 |   |
| **S** | -0,473 | -0,331 | -0,496 | -0,450 | -0,658\* | -0,867\*\* | -0,802\*\* | 0,641\* | 0,347 | -0,832\*\* | -0,525\* |  1 |

T = temperature; W = wind speed; H = relative humidity; P = atmospheric pressure; S= solar radiation ; **\*** (*p* < 0.05); **\*\*** (*p* < 0.01); (PCDD/Fs: N = 12; PCBs: N = 13)

**Table S8**

Pearson correlation matrix for concentrations of Ti-PCBs, Tmo-PCBs, Tno-PCBs, TPCBs, TPCDDs, TPCDFs and TPCDD/Fs (**PM2.5**) and meteorological variables.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Ti-PCB** | **Tmo-PCB** | **Tno-PCB** | **TPCB** | **TPCDD** | **TPCDF** | **TPCDD/F** | **T** | **W** | **H** | **P** | **S** |
| **Ti-PCB** | 1 |  |  |  |  |  |  |  |  |  |  |  |
| **Tmo-PCB** | 0,972\*\* | 1 |  |  |  |  |  |  |  |  |  |  |
| **Tno-PCB** | 0,774\*\* | 0,805\*\* | 1 |  |  |  |  |  |  |  |  |  |
| **TPCB** | 0,998\*\* | 0,984\*\* | 0,786\*\* | 1 |  |  |  |  |  |  |  |  |
| **TPCDD** | -0,050 | -0,138 | 0,042 | -0,072 | 1 |  |  |  |  |  |  |  |
| **TPCDF** | 0,221 | 0,141 | 0,253 | 0,203 | 0,905\*\* | 1 |  |  |  |  |  |  |
| **TPCDD/F** | 0,116 | 0,034 | 0,192 | 0,097 | 0,960\*\* | 0,987\*\* | 1 |  |  |  |  |  |
| **T** | -0,056 | -0,048 | -0,291 | -0,055 | -0,745\*\* | -0,803\*\* | -0,809\*\* | 1 |  |  |  |  |
| **W** | 0,141 | 0,133 | -0,213 | 0,139 | -0,677\* | -0,659\* | -0,695\*\* | 0,545\* | 1 |  |  |  |
| **H** | 0,301 | 0,252 | 0,545 | 0,291 | 0,735\*\* | 0,865\*\* | 0,848\*\* | -0,832\*\* | -0,640\* | 1 |  |  |
| **P** | 0,136 | 0,085 | 0,204 | 0,125 | 0,824\*\* | 0,798\*\* | 0,828\*\* | -0,725\*\* | -0,386 | 0,697\*\* | 1 |  |
| **S** | -0,311 | -0,181 | -0,360 | -0,281 | -0,620\* | -0,749\*\* | -0,720\*\* | 0,641\* | 0,347 | -0,832\*\* | -0,525\* | 1 |

T = temperature; W = wind speed; H = relative humidity; P = atmospheric pressure; S= solar radiation ; **\*** (*p* < 0.05); **\*\*** (*p* < 0.01); (PCDD/Fs: N = 13; PCBs: N = 13)

**Table S9**

Pearson correlation matrix for concentrations of Ti-PCBs, Tmo-PCBs, Tno-PCBs, TPCBs, TPCDDs, TPCDFs and TPCDD/Fs (**PM1**) and meteorological variables

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Ti-PCB** | **Tmo-PCB** | **Tno-PCB** | **TPCB** | **TPCDD** | **TPCDF** | **TPCDD/F** | **T** | **W** | **H** | **P** | **S** |
| **Ti-PCB** | 1 |  |  |  |  |  |  |  |  |  |  |   |
| **Tmo-PCB** | 0,962\*\* | 1 |  |  |  |  |  |  |  |  |  |   |
| **Tno-PCB** | 0,966\*\* | 0,959\*\* | 1 |  |  |  |  |  |  |  |  |   |
| **TPCB** | 0,996\*\* | 0,982\*\* | 0,972\*\* | 1 |  |  |  |  |  |  |  |   |
| **TPCDD** | 0,686 | 0,598 | 0,753\* | 0,664 | 1 |  |  |  |  |  |  |   |
| **TPCDF** | 0,943\*\* | 0,910\*\* | 0,970\*\* | 0,941\*\* | 0,806\* | 1 |  |  |  |  |  |   |
| **TPCDD/F** | 0,923\*\* | 0,878\*\* | 0,958\*\* | 0,916\*\* | 0,868\*\* | 0,994\*\* | 1 |  |  |  |  |   |
| **T** | -0,301 | -0,418 | -0,488 | -0,342 | -0,350 | -0,448 | -0,443 | 1 |  |  |  |   |
| **W** | -0,460 | -0,444 | -0,459 | -0,460 | -0,863\*\* | -0,539 | -0,618 | 0,545\* | 1 |  |  |   |
| **H** | 0,747\* | 0,726\* | 0,797\* | 0,747\* | 0,755\* | 0,858\*\* | 0,864\*\* | -0,832\*\* | -0,640\* | 1 |  |   |
| **P** | 0,238 | 0,261 | 0,282 | 0,248 | -0,009 | 0,327 | 0,273 | -0,725\*\* | -0,386 | 0,697\*\* | 1 |   |
| **S** | -0,828\* | -0,762\* | -0,555 | -0,814\* | -0,654 | -0,782\* | -0,782\* | 0,641\* | 0,347 | -0,832 | -0,525\* | 1  |

T = temperature; W = wind speed; H = relative humidity; P = atmospheric pressure; S= solar radiation; **\*** (*p* < 0.05); **\*\*** (*p* < 0.01); (PCDD/Fs: N = 8; PCBs: N = 8)

**Table S10**

Clausius-Clapeyron regression parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Congener** | **m (slope)** | **b (intercept)** | **R2 (%)** | **p** |
| **no-PCB** |   |   |   |   |
| PCB-77 | -9999 | -2.96 | 73 | 0.0002 |
| PCB-81 | -9060 | -9.52 | 65 | 0.0008 |
| PCB-126 | -7289 | -14.6 | 52 | 0.0056 |
| PCB-169 | -6136 | -22.3 | 66 | 0.0007 |
| **mo-PCB** |  |  |  |  |
| PCB-123 | -4851 | -20.5 | 11 | 0.2701 |
| PCB-118 | -4159 | -18.8 | 7 | 0.3771 |
| PCB-114 | -2824 | -27.2 | 2 | 0.6536 |
| PCB-105 | -8987 | -3.80 | 15 | 0.1906 |
| PCB-167 | -3652 | -24.2 | 1 | 0.7379 |
| PCB-156 | -5603 | -16.1 | 6 | 0.4331 |
| PCB-157 | -6067 | -16.0 | 11 | 0.2745 |
| PCB-189 | -9536 | -7.01 | 52 | 0.0055 |
| **i-PCB** |  |  |  |  |
| PCB-28 | -5118 | -16.90 | 65 | 0.0008 |
| PCB-52 | -5360 | -14.30 | 51 | 0.0061 |
| PCB-101 | -4990 | -15.50 | 33 | 0.0385 |
| PCB-138 | -3724 | -20.90 | 4 | 0.4919 |
| PCB-153 | -3625 | -21.30 | 10 | 0.2990 |
| PCB-180 | -5606 | -16.50 | 26 | 0.0769 |

**Table S11**

Summary statistics (average ± SD, (median), range) of concentration (pg m-3) of PCDDs, PCDFs, PCDD/Fs, no-PCBs, mo-PCBs, dl-PCBs and TPCB in PUF, TSP, PM10, PM2.5 and PM1 samples, and PUF + TSP.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **TPCDDs** | **TPCDFs** | **TPCDD/Fs** | **Tno-PCBs** | **Tmo-PCBs** | **Tdl-PCBs** | **Ti-PCBs** | **TPCBs** |
| **PUF+TSP** | 0.06 ± 0.05 (0.03) | 0.08 ± 0.08 (0.04) | 0.14 ± 0.13 (0.07) | 1.31 ± 1.06 (0.81) | 108 ± 73.7 (110) | 110 ± 74.1 (111) | 323 ± 196 (309) | 433 ± 255 (437) |
|  | 0.02 - 0.17N = 14 | 0.01 – 0.24N = 14 | 0.04 -0.41N = 14 | 0.17 – 3.39N = 13 | 13.1 – 253N = 13 | 13.7 – 255N = 13 | 91.0 – 736N = 13 | 105 – 938N = 13 |
|  |  |  |  |  |  |  |  |  |
| **PUF** | 0.02 ± 0.02 (0.01) | 0.02 ± 0.02 (0.02) | 0.04 ± 0.04 (0.03) | 1.28 ± 1.05 (0.78) | 106 ± 72.4 (108) | 107 ± 72.9 (108) | 320 ± 196 (308) | 428 ± 254 (425) |
|  | 0.001 – 0.06N = 14 | 0.002 – 0.08N = 14 | 0.004 – 0.14N = 14 | 0.17 – 3.34N = 13 | 13.1 – 247N = 13 | 13.6 – 250N = 13 | 90.4 – 73.1N = 13 | 104 – 930N = 13 |
|  |  |  |  |  |  |  |  |  |
| **TSP** | 0.04 ± 0.04 (0.02) | 0.06 ± 0.06 (0.03) | 0.10 ± 0.10 (0.05) | 0.03 ± 0.02 (0.03) | 2.24 ± 1.87 (2.28) | 2.28 ± 1.88 (2.34) | 3.94 ± 4.55 (2.92) | 6.22 ± 6.02 (378) |
|  | 0.01 - 0.15N = 15 | 0.01 – 0.19N = 15 | 0.02 – 0.34N = 15 | 0.003 – 0.09N = 15 | 0.02 – 5.95N = 15 | 0.06 – 5.99N = 15 | 0.31- 18.2N = 15 | 0.49 – 24.2N = 15 |
|  |  |  |  |  |  |  |  |  |
| **PM10** | 0.03 ± 0.03 (0.03) | 0.05 ± 0.04 (0.04) | 0.09 ± 0.07 (0.07) | 0.04 ± 0.03 (0.02) | 3.02 ± 3.87 (1.54) | 3.05 ± 3.89 (1.55) | 4.56 ± 10.3 (1.14) | 7.61 ± 13.8 (3.57) |
|  | 0.01 – 0.11N = 12 | 0.01 – 0.14N = 12 | 0.02 – 0.25N = 12 | 0.004 – 0.10N = 13 | 0.02 – 13.9N = 13 | 0.07 – 14.0N = 13 | 0.38 – 38.7N = 13 | 0.44 – 52.7N = 13 |
|  |  |  |  |  |  |  |  |  |
| **PM2.5** | 0.03 ± 0.03 (0.02) | 0.06 ± 0.05 (0.03) | 0.09 ± 0.08 (0.05) | 0.03 ± 0.03 (0.03) | 2.02 ± 2.91 (1.14) | 2.05 ± 2.94 (1.15) | 5.08 ± 8.94 (1.41) | 7.13 ± 11.8 (2.39) |
|  | 0.01 – 0.11N = 13 | 0.01 – 0.15N = 13 | 0.02 – 0.27N = 13 | 0.003 – 0.12N = 13 | 0.13 – 10.8N = 13 | 0.18 – 11.0N = 13 | 0.01 – 31.1N = 13 | 0.31 – 42.1N = 13 |
|  |  |  |  |  |  |  |  |  |
| **PM1** | 0.02 ± 0.01 (0.01) | 0.03 ± 0.03 (0.02) | 0.04 ± 0.03 (0.03) | 0.04 ± 0.04 (0.03) | 3.18 ± 3.71 (2.12) | 3.21 ± 3.75 (2.15) | 4.18 ± 7.97 (0.70) | 7.39 ± 11.6 (2.56) |
|  | 0.01 – 0.03N = 8 | 0.01 – 0.09N = 8 | 0.02 – 0.12N = 8 | 0.003 – 0.13N = 8 | 0.01 – 11.5N = 8 | 0.01 – 11.7N = 8 | 0.003 – 23.5N = 8 | 0.01 – 35.1N = 8 |

**Table S12**

Summary statistics (average ± SD, (median), range) of the toxic contents (fg-TEQ05/m3) of PCDDs, PCDFs, PCDD/Fs, no-PCBs, mo-PCBs, dl-PCBs and TPCB in PUF, TSP, PM10, PM2.5 and PM1 samples, and PUF + TSP.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **TPCDDs** | **TPCDFs** | **TPCDD/Fs** | **Tno-PCBs** | **Tmo-PCBs** | **Tdl-PCBs** |
| **PUF+TSP** | 5.51 ± 4.77 (3.28) | 5.27 ± 5.20 (2.77) | 10.8 ± 9.48 (6.26) | 11.0 ± 6.40 (10.5) | 3.25 ± 2.21 (3.30) | 14.2 ± 8.15 (13.4) |
|  | 1.76 - 17.3 | 0.69 - 16.8 | 3.40 -34.0 | 2.42 - 22.6 | 0.39 – 7.58 | 3.09 – 30.2 |
|  |  |  |  |  |  |  |
| **PUF** | 3.36 ± 3.89 (1.82) | 1.67 ± 1.79 (1.16) | 5.03 ± 5.58 (2.96) | 10.3 ± 6.48 (9.95) | 3.19 ± 2.17 (3.23) | 13.5 ± 8.17 (12.6) |
|  | 0.63 - 13.7 | 0.18 - 6.77 | 0.81 - 20.5 | 1.93 – 22.0 | 0.39 – 7.42 | 2.58 – 29.4 |
|  |  |  |  |  |  |  |
| **TSP** | 2.08 ± 1.27 (1.61) | 4.03 ± 4.25 (1.68) | 6.11 ± 5.12 (3.01) | 0.79 ± 0.49 (0.69) | 0.07 ± 0.06 (0.07) | 0.86 ± 0.50 (0.80) |
|  | 0.96 - 5.25 | 0.42 - 13.5 | 11.7 - 18.8 | 0.13 - 2.19 | 0.001 - 0.18 | 0.14 - 2.21 |
|  |  |  |  |  |  |  |
| **PM10** | 2.43 ± 1.52 (1.77) | 3.37 ± 3.06 (2.11) | 5.80 ± 4.19 (3.51) | 0.78 ± 0.63 (0.58) | 0.09 ± 0.12 (0.05) | 0.87 ± 0.69 (0.58) |
|  | 0.99 - 5.43 | 0.42 - 8.87 | 1.41 - 13.5 | 0.22 - 2.30 | 0.001 - 0.42 | 0.26 - 2.34 |
|  |  |  |  |  |  |  |
| **PM2.5** | 2.26 ± 1.47 (1.78) | 4.01 ± 3.83 (1.52) | 6.28 ± 4.94 (3.30) | 0.89 ± 0.71 (0.76) | 0.06 ± 0.09 (0.03) | 0.95 ± 0.78 (0.86) |
|  | 0.93 - 5.17 | 0.29 - 10.8 | 1.22 - 16.0 | 0.16 - 2.81 | 0.004 - 0.32 | 0.17 - 3.13 |
|  |  |  |  |  |  |  |
| **PM1** | 1.58 ± 0.31 (1.51) | 2.32 ± 3.31 (1.13) | 3.90 ± 3.34 (3.06) | 0.81 ± 0.87 (0.59) | 0.10 ± 0.11 (0.06) | 0.91 ± 0.97 (0.67) |
|  | 1.25 - 2.11 | 0.67 - 10.4 | 1.92 - 12.0 | 0.10 - 2.88 | 0.002 - 0.35 | 0.10 - 3.23 |



**Fig. S1.** Average concentration congener profiles of (a) i-PCBs, (b) dl-PCBs and (c) PCDD/Fs. Due to the large number of congeners analyzed, only those whose contribution to the total concentration was > 5 %, in the case of PCDD/Fs, or > 1% for PCBs, are represented



**Fig. S2.** Estimated fraction of PCDD/Fs bounded to particles (φ, %) at 18 ºC (annual mean temperature) for 10%, 20% and 30% organic matter fractions in TSP, PM10, PM2.5 and PM1 versus log KOA.