**Supplementary material of “The effect of biochar amendments on 14C-labelled phenanthrene sorption, desorption and mineralisation in different soils”, by Moreno Jiménez et al.**

**Table SM1.** Effect of contact time on sorption coefficients of Phe by non-amended and amended soil samples and sand in single component system. Experimental conditions: c0 =10 μg Phe g-1, amount of soil 100 g L-1, 1000-1600 Be 14C Phe g-1 soil. Kd and Koc in non-amended (NoBC) samples (sand, Witten soil, Bottrop soil) and samples amended by 1% (w/w) pine woodchips-derived biochar (PBC), olive pruning-derived biochar (OBC) and rice biochar (RBC).

|  |  |  |
| --- | --- | --- |
|   | **Amendment** | **contact time** |
| **7 h** | **24 h** | **48 h** |
| logKd | logKoc | logKd | logKoc | logKd | logKoc |
| **Sand** | NoBc | -0.2 | - | 0.13 | - | 0.10 | - |
| PBC | 0.13 | 2.45 | 0.85 | 3.07 | 0.83 | 3.05 |
| OBC | 0.74 | 3.11 | 1.79 | 4.16 | 1.80 | 4.15 |
| RBC | 0.43 | 2.98 | 1.49 | 4.05 | 1.40 | 4.04 |
| **Witten** | NoBc | 1.18 | 2.85 | 1.33 | 3.70 | 1.34 | 3.68 |
| PBC | 1.14 | 2.74 | 1.46 | 3.75 | 1.46 | 3.74 |
| OBC | 1.35 | 2.95 | 1.63 | 3.83 | 1.63 | 3.82 |
| RBC | 1.23 | 2.85 | 1.53 | 3.86 | 1.53 | 3.85 |
| **Bottrop** | NoBc | 1.71 | 3.29 | 2.11 | 3.89 | 2.10 | 3.88 |
| PBC | 1.71 | 3.22 | 1.96 | 3.87 | 1.95 | 3.86 |
| OBC | 1.76 | 3.28 | 2.05 | 3.87 | 2.04 | 3.88 |
| RBC | 1.67 | 3.21 | 1.93 | 3.87 | 1.93 | 3.89 |

**Figure SM1.** Average Koc (upper graph) and Kd (lower graph) in the isotherm of Phe sorption experiment. \*The value of Kd for sand was -0.12, not visible in the graph. Mean±SE, n=12, grouping all the values of the isotherm for each treatment (1, 2.5, 5 and 10 mg Phe g-1 together). Different letters indicate statistical differences (p<0.05) between biochar treatments in each soil/substrate.



**Figure SM2.** Experimental Kd or Koc to calculated Kd or Koc relationship (right and left side respectively) in treatments where biochars were added to soil. Averages values from the sorption isotherm were used for both parameters. Experimental data were obtained from the isotherm experiment for treatments Witten PBC, OBC and RBC and Bottrop PBC, OBC and RBC. The calculated value for the respective samples was estimated by summing the Kd/Koc observed in the respective soil system to the Kd/Koc in each soil (Witten and Bottrop without biochar).

