

Figure S1: Calculated Log Dow (green line, secondary vertical axis) and anionic (slashed line), neutral (black line), and cationic (dot line) molar fraction of the studied molecules for pH range between 1 and 15. Blue pale square marked the experimental pH range.

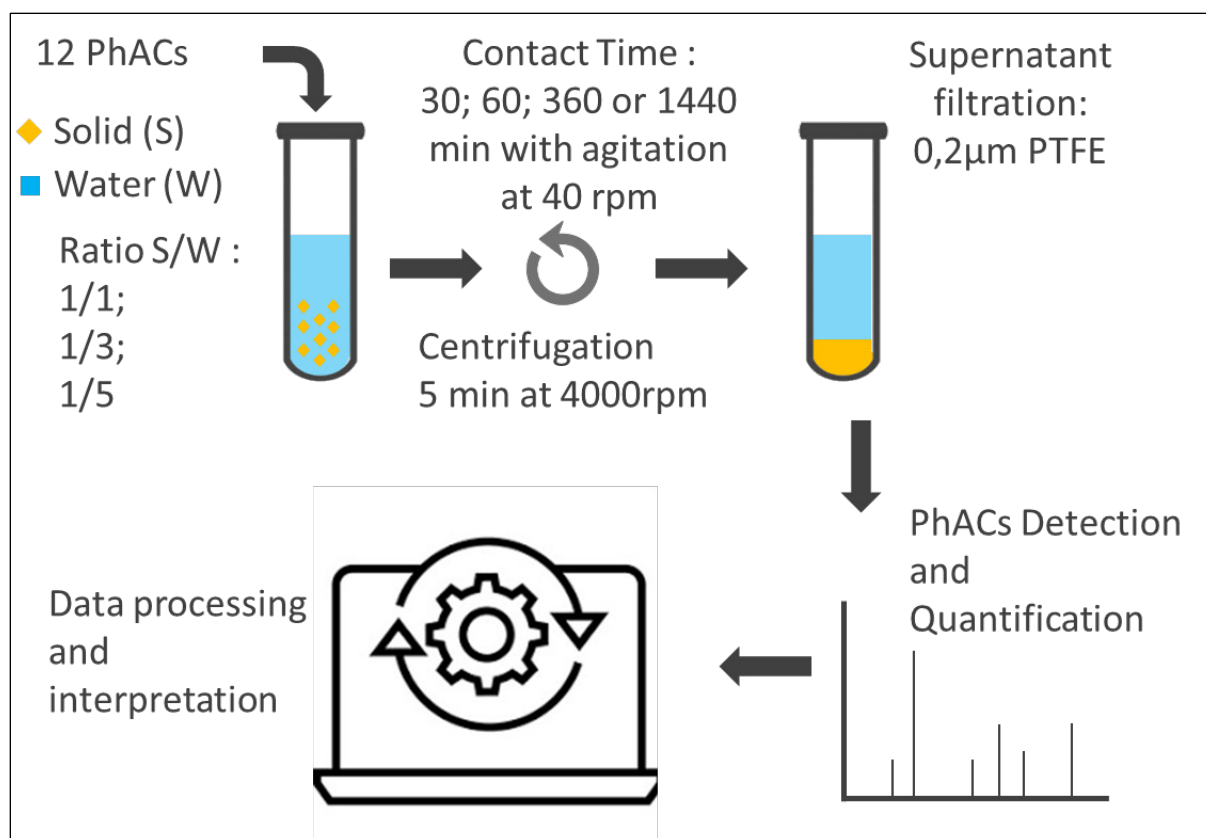


Figure S2: Experimental procedure schematic diagram.

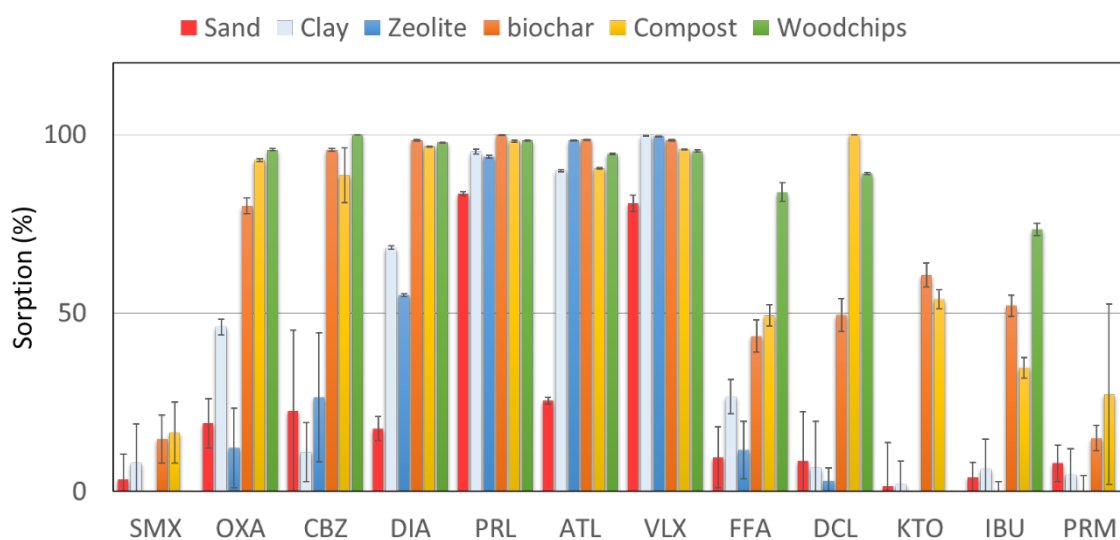


Figure S3: PhACs sorption on studied materials: clay (pale blue), zeolite (dark blue), biochar (orange), compost (yellow), and woodchips (green) compared with sorption onto sand (red Bars). Standard deviations from the triplicates are displayed as errors bars.

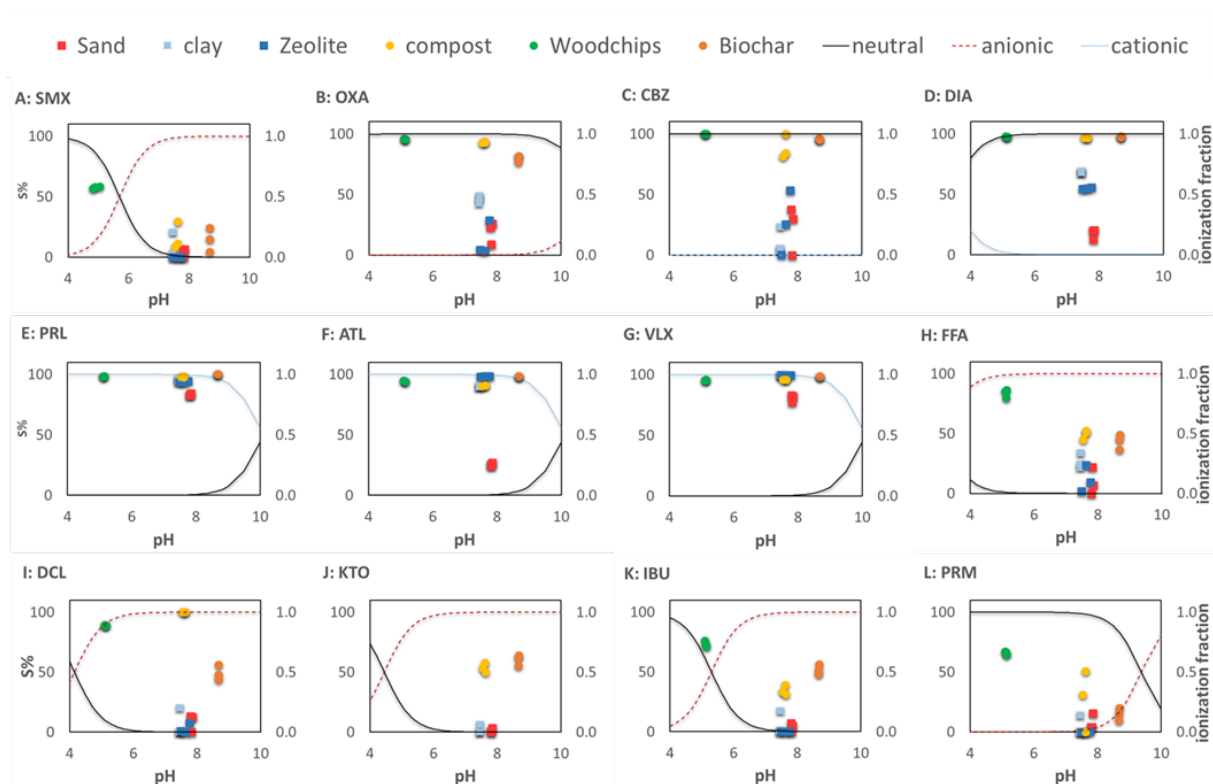


Figure S4: Sorption of the 12 PhACs onto the studies materials (sand: red squares, clay: pale blue squares, zeolite: dark blue squares, compost: yellow circles, woodchips: green circles, and biochar: orange circles) and their ionization fraction (neutral: black line, anionic: red dash line, and cationic blue dot line) for the experimental pH range.

Table S1: Composition of the SWW used in the experiments. The composition was achieved by the addition of 0.133 g of CaCl_2 , 0.687 g of NaCl , 0.058 g of NaHCO_3 , and 0.064 g of KHCO_3 to the commercial brand Aix les Bains®.

	C (mg/L)
Cl^-	507,36
Ca^{2+}	124,79
Na^+	390,71
HCO_3^-	400,00
K^+	27,20
NH_4^+	58,03
F^-	0,31
NO_2^-	5,36
Br^-	1,00
NO_3^-	0,47
PO_4^{3-}	7,22
SO_4^{2-}	101,92

Table S2: Experimental conditions of the batch sets performed to assess the role of the experimental parameters (S:W ratio, contact time, Water composition, and Grain size) in the sorption capacity of Sand, compost and clay, and in the batch performed to compare the sorption capacity of the five sustainable material studied to sand sorption capacity. Crosses in green indicates the values tested in each case, and crosses in black indicated the default value of the parameter.

Parameters tested to assess the effect of:		S:W ratio	Contact time	Water composition	Grain size	Sorption compared to sand
S:W ratio	1:1	X				
	1:3	X	X	X	X	X
	1:5	X				
Contact time (min)	30		X			
	60	X	X	X	X	X
	360		X			
	1440		X			
Water Composition	Mili-Q	X	X	X	X	
	SWW			X		X
Grain Size	Crushed	X	X	X	X	X
	< 2 mm				X	

Table S3. Ionization mode, m/z and retention time of the selected molecules

Molecule	Acronym	Formula	Ionization mode	m/z	Retention time (min)
Sulfamethoxazole	SMX	C ₁₀ H ₁₁ N ₃ O ₃ S	(-)	252.0451	8.9
Oxazepam	OXA	C ₁₅ H ₁₁ ClN ₂ O ₂	(-)	285.0439	11.0
Carbamazepine	CBZ	C ₁₅ H ₁₂ N ₂ O	(+)	237.1027	10.6
Diazepam	DIA	C ₁₆ H ₁₃ ClN ₂ O	(+)	285.0792	8.8
Propanolol	PRL	C ₁₆ H ₂₁ NO ₂	(+)	260.1648	9.6
Atenolol	ATL	C ₁₄ H ₂₂ N ₂ O ₃	(+)	267.1706	1.6
Venlafaxine	VLX	C ₁₇ H ₂₇ NO ₂	(+)	278.2118	8.8
Fenofibric Acid	FFA	C ₁₇ H ₁₅ ClO ₄	(-)	317.0591	11.4
Diclofenac	DCL	C ₁₄ H ₁₁ Cl ₂ NO ₂	(-)	294.0098	13.5
Ketoprofen	KTO	C ₁₆ H ₁₄ O ₃	(-)	285.0873	11.7
Ibuprofen	IBU	C ₁₃ H ₁₈ O ₂	(-)	205.1234	13.1
Paracetamol	PRM	C ₈ H ₉ NO ₂	(-)	150.0562	1.9