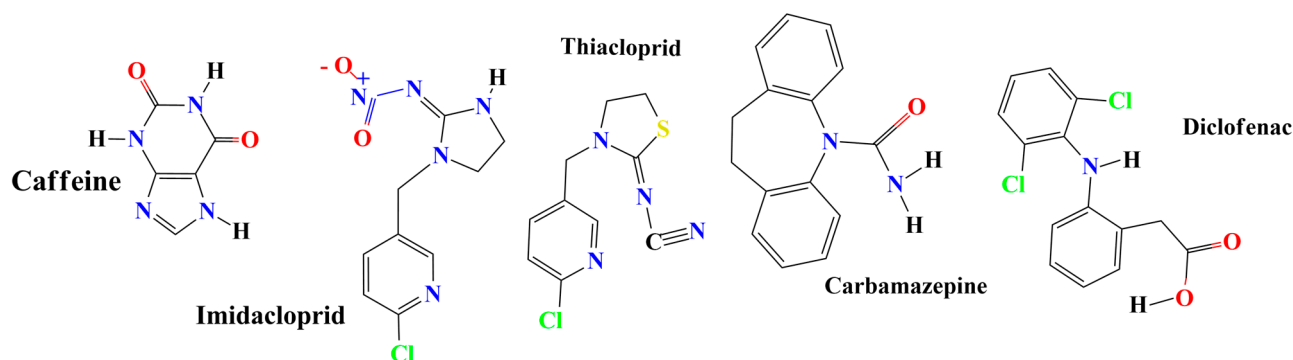# Support information

Table S1. Composition of Urban Wastewater Treatment Plant Effluent.

UWWTP effluent (EDAR 'El Bobar' Almería, Spain)			
Cations	**[mg/L]**	**Anions**	**[mg/L]**
Ca^{2+}	81	SO_4^{2+}	148
Mg^{2+}	48	Cl^-	489
K^+	30	NO_3^-	5
Na^+	314		
Conductivity [mS/cm]			2.7
pH			8.0
TC [mg/L]			30.0
TSS [mg/L]			60.0

Table S2. Schematic overview of molecular structures of selected MCs.

Schematic overview of molecular structures the selected MCs (CAF, IMI, THI, CBZ and DCF). Molecular charge is shown in red for negative, moderate negative for yellow, green for neutral and blue for positive for the applicable atoms.

Table S3. Molecular weight, UPLC column retention time, LOQ and maximum contaminant absorption.

Name	Molecular Weight [g/mol]	t_R [min]	LOQ [µg/L]	Absorption λ [nm]
CAF	*194.2*	3.5	5	273
IMI	*259.7*	7.9	5	273
THI	*252.7*	9.6	5	213
CBZ	*236.3*	10.9	5	267
DCF	*318.1*	14.0	5	285

Table S4. Overview of oxidation treatments and their parameters.

	Volume	#	Bicarbonates [mg/L]	Iron	pH	Iron [mM]	EDDS [mM]	Fe:EDDS ratio	H_2O_2 [mM]
Solar Simulator	Permeate	1	<75	Fe (III)	7	0.10	0.10	1:1	1.50
Solar Simulator	Concentrate	2	<75	Fe (III)	7	0.10	0.10	1:1	1.50
Solar Simulator	Permeate	3	720	Fe (III)	8	0.10	0.10	1:1	1.50
Solar Simulator	Concentrate	4	720	Fe (III)	8	0.10	0.10	1:1	1.50

Table S5. Composition of natural water (Tabernas, Spain).

Natural water (Tabernas , Spain)			
Cations	[mg/L]	**Anions**	[mg/L]
Ca^{2+}	29	**SO$_4$$^{2+}$**	130
Mg^{2+}	47	**Cl$^-$**	186
K$^+$	7	**NO$_3$$^-$**	10
Na$^+$	390		
Conductivity [mS/cm]			2.7
pH			7.8
TC [mg/L]			174.2