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Supplementary Materials

Photocatalytic Transformation of Triclosan. Reaction Products and Kinetics

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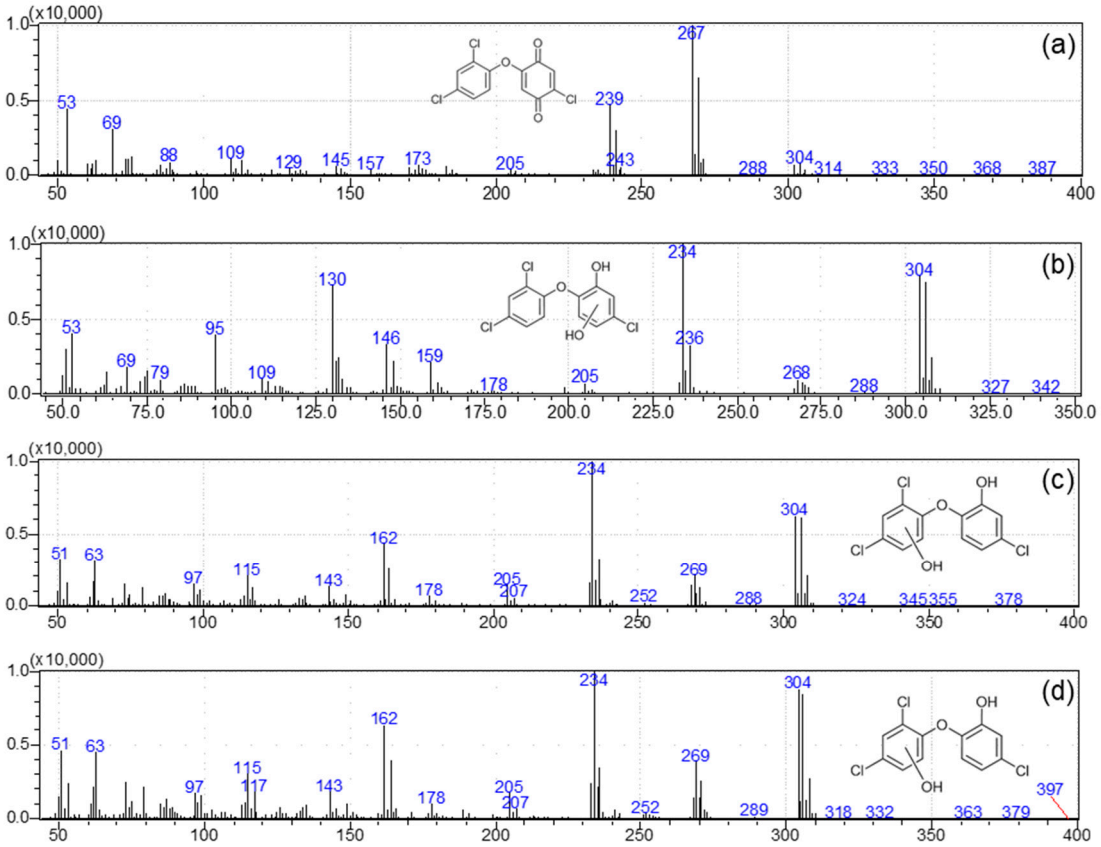

Figure S1. GC-MS spectra of the TCS derivatives: (a) TCS quinone, (b) hydroxylated TCS 1, (c) hydroxylated TCS 2 and (d) hydroxylated TCS 3

Table S1. 2,4-dichlorophenol kinetic constants reviewed in bibliography

2,4-DICHLOROPHENOL DEGRADATION			
Conditions	**Kinetic equations and parameters**		**Reference**
	Kinetic equations	k (min $^{-1}$)	
$[2,4\text{-DCP}]_0$= 50 mg L^{-1}; $[TiO_2]$ = 1.4 g L^{-1}; V = 0.1 L; pH = 3-11; Hg lamp = 5.8 W, λ = 254 nm; Light intensity = 500 μW cm^{-2}	$-\frac{d24DCP}{dt} = \frac{kK\,[24DCP]}{1 + K\,[24DCP]}$ K = adsorption constant = 1.3 – 1.8·10^3 L mol^{-1}	k = 4.00-5.50·10^{-4} M h^{-1}	1
$[2,4\text{-DCP}]_0$ = 163 mg L^{-1}; $[TiO_2]$ = 2 g L^{-1}; V = 0.04 L; pH = 5.6; Hg lamp = 125 W; λ = 365 nm; Light intensity = 2.3·10^{-5} Einstein min^{-1}	$-\frac{d24DCP}{dt} = \frac{K_1K_2\,[24DCP]}{1 + K_2\,[24DCP]}$ K_1 = reaction rate K_2 = adsorption constant = 3.2·10^3 L mol^{-1}	K_1 = 4.50·10^{-5} M min^{-1}	2
$[2,4\text{-DCP}]_0$ = 20 mg C L^{-1} = 45.2 mg L^{-1}; $[TiO_2]$ = 0.1 g L^{-1}; V = 0.8 L; pH = 6, Hg lamp = 125 W;	$\frac{d24DCP}{dt} = k_1[24DCP]$	k_1 = 3.28·10^{-2} $t_{1/2}$ = 22 min	3
$[2,4\text{-DCP}]_0$ = 125 mg L^{-1}; $[TiO_2]$ = 0.01-2 g L^{-1}; V = 0.5-1.5 L; pH = 5.5; Solar simulator, (UV range up to 436 nm), Xe lamp = 1500 W	$\frac{d24DCP}{dt} = k_1[24DCP] - k_2[INTERM.]$	k_1 = 1.20·10^{-2} - 6.60·10^{-2} k_2 = 4.50·10^{-2} - 9.00·10^{-3}	4
$[2,4\text{-DCP}]_0$ = 20 mg L^{-1}; $[TiO_2]$ = 2 g L^{-1}; V = 0.02 L; UV LED, λ = 365 nm; Light intensity = 8.55 × 10^{16} photon/s;	$\frac{d24DCP}{dt} = -k_{24DCP}[24DCP]$	k = 3.12·10^{-2}	5
$[2,4\text{-DCP}]_0$= 25, 50, 75, 100 mg L^{-1}; $[TiO_2]$= 0.5 g L^{-1}; V= 1 L; Solar simulator = 1000 mW cm^{-2}	$\frac{d24DCP}{dt} = -k_{24DCP}[24DCP]$	k (50 ppm) = 5.11·10^{-1}	6
TCS_0 = 34.5 μM (10 mg L^{-1}); TiO_2= 1.5 g L^{-1}; V= 1 L; pH = 5.8; LED lamp (UV) = 35 W, λ = 365 nm	$\frac{dTCS}{dt} = -k_1[TCS]$ $\frac{dHICs}{dt} = k_1[TCS] - k_2[HICs]$ $\frac{dDCP}{dt} = k_2[HICs] - k_3[DCP]$ $\frac{dLOCs}{dt} = k_3[DCP] - k_4[LOCs]$ $\frac{dP}{dt} = k_4[LOCs]$	k_1 = 4.20·10^{-2} k_2 = 1.00·10^{-1} k_3 = 1.95·10^{-1} k_4 = 2.92·10^0	This work

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