

Supplementary Data

SUPPLEMENTARY TABLE S1. NITRATE, 2,4-DICHLOROPHENOL, AND PERFLUOROCTANOIC REMOVAL BY VARIOUS ADVANCED REDUCTION PROCESSES

	<i>UV-L</i>			<i>UV-N</i>		
	<i>pH 2.2</i>	<i>pH 7.2</i>	<i>pH 11.8</i>	<i>pH 2.2</i>	<i>pH 7.2</i>	<i>pH 11.8</i>
Nitrate removal at 2/20 h (%)						
Ferrous iron	18.3/18.1	7.0/89.8	21.2/55.5	11.5/−0.8	2.8/4.6	14.3/−1.8
Sulfite	1.6/55.8	100/100	100/100	7.2/−0.8	6.6/3.4	−0.7/4.4
Dithionite	0.3/30.9	50.9/91.6	57.0/100	−2.2/−8.1	−0.6/1.9	2.2/5.0
2,4-DCP removal at 2/20 h (%)						
Ferrous iron	14.20/35.41	35.21/64.59	71.18/79.4	1.7/88.6	25.5/44.2	52.0/64.7
Sulfite		76.06/94.94	74.77/93.9		55.5/66.05	69.9/73.88
Dithionite		14.49/49.13	10.59/44.4			
PFOA removal at 2/20 h (%)						
Ferrous iron	4.0/4.3	3.4/6.3	2.3/5.2	6.5/0	0/0	0/0
Sulfite	2.3/3.5	3.1/25.4	2.1/40.8	0/0	0/0	0/0
Dithionite	31.1	34.2	30.5	31.3	35.9	34.7

2,4-DCP, 2,4-dichlorophenol; PFOA, perfluorooctanoic acid; UV, ultraviolet; UV-L, UV light from low-pressure bulbs; UV-N, UV light from a narrow band source.

SUPPLEMENTARY TABLE S2. NITRATE REMOVAL BY REDUCTANT/ELECTRON BEAM

<i>Reagent</i>	<i>pH</i>	<i>Dissolved oxygen</i>	<i>HCO₃⁻ (mM)</i>	<i>Nitrate removal (%) Electron beam (10 kGy)</i>
None	3	Saturated	0.005	0
None	7	Saturated	0.005	14
None	11	Saturated	0.005	36
None	3	Saturated	0.05	0
None	7	Saturated	0.05	14
None	11	Saturated	0.05	63
None	3	≅ 0	0.005	2
None	7	≅ 0	0.005	16
None	11	≅ 0	0.005	60
None	3	≅ 0	0.05	0
None	7	≅ 0	0.05	9
None	11	≅ 0	0.05	72
Dithionite	7	≅ 0	0.005	98
Sulfite	7	≅ 0	0.005	100
Ferrous iron	7	≅ 0	0.005	69
Ti ³⁺	n.a.	≅ 0	0.005	0

SUPPLEMENTARY TABLE S3. PERCHLORATE REMOVAL
BY VARIOUS ADVANCED REDUCTION PROCESSES

	<i>UV-L (2 hr)</i>	<i>UV-L (20 hr)</i>
Perchlorate removal (%)		
Sulfite	3	17

SUPPLEMENTARY TABLE S4. 2,4-DICHLOROPHENOL
REMOVAL BY VARIOUS ADVANCED REDUCTION PROCESSES

	<i>Microwave (7 min)</i>	<i>Electron beam (10 kGy)</i>	<i>Ultrasound (2 h)</i>
2,4-DCP removal (%)			
Dithionite	9.0	17	87
Ferrous iron		68	
Sulfite		72	