

Supplementary Tables

Table S1. Pearson correlations for heavy metals in wastewater and surface waters.

	Zinc	Copper	Cadmium	Iron	Lead
Zinc	1				
Copper	−0.914**	1			
Cadmium	−0.971**	0.940**	1		
Iron	0.819**	−0.671**	−0.786**	1	
Lead	0.898**	−0.744**	−0.863**	0.737**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Table S2. ANOVA for heavy metals in wastewater and surface waters.

		Sum of Squares	df	Mean Square	F	Sig.
Month	Between Groups	0.027	2	0.013	0.004	0.996
	Within Groups	312.702	104	3.007		
	Total	312.729	106			
Location	Between Groups	16.872	2	8.436	7.206	0.001
	Within Groups	121.745	104	1.171		
	Total	138.617	106			
Zinc	Between Groups	3.107	2	1.554	0.108	0.898
	Within Groups	1492.759	104	14.353		
	Total	1495.867	106			
Copper	Between Groups	0.000	2	0.000	0.026	0.974
	Within Groups	0.234	104	0.002		
	Total	0.234	106			
Cadmium	Between Groups	0.000	2	0.000	0.023	0.977
	Within Groups	0.605	104	0.006		
	Total	0.606	106			
Iron	Between Groups	9.299	2	4.650	0.898	0.410
	Within Groups	538.209	104	5.175		
	Total	547.509	106			
Lead	Between Groups	0.003	2	0.001	.037	.964
	Within Groups	3.654	104	0.035		
	Total	3.657	106			

Table S3. Pearson correlations for heavy metals in Sludge.

	Zinc	Copper	Cadmium	Iron	Lead
Zinc	1				
Copper	0.036	1			
Cadmium	−0.148	0.117	1		
Iron	−0.315	0.037	0.219	1	
Lead	0.578**	−0.020	−0.478**	−0.207	1

**. Correlation is significant at the 0.01 level (2-tailed).

Table S4. ANOVA for heavy metals in sludge.

		Sum of Squares	df	Mean Square	F	Sig.
Month	Between Groups	1.049	2	0.524	0.166	.847
	Within Groups	103.951	33	3.150		
	Total	105.000	35			
Location	Between Groups	0.000	2	0.000		
	Within Groups	0.000	33	0.000		
	Total	0.000	35			
Zinc	Between Groups	25.954	2	12.977	1.051	0.361
	Within Groups	407.648	33	12.353		
	Total	433.603	35			
Copper	Between Groups	0.883	2	0.442	4.096	0.026
	Within Groups	3.558	33	0.108		
	Total	4.441	35			
Cadmium	Between Groups	0.000	2	0.000	0.011	0.989
	Within Groups	0.330	33	0.010		
	Total	0.330	35			
Iron	Between Groups	245.122	2	122.561	1.050	0.361
	Within Groups	3850.518	33	116.682		
	Total	4095.639	35			
Lead	Between Groups	0.166	2	0.083	0.164	0.850
	Within Groups	16.764	33	0.508		
	Total	16.930	35			

Table S5. Levels of heavy metals in sludge samples (mg kg⁻¹).

Location	Month	Zn (mg.kg ⁻¹)	Cu (mg.kg ⁻¹)	Cd (mg.kg ⁻¹)	Fe (mg.kg ⁻¹)	Pb (mg.kg ⁻¹)
WWTP-A	September	<DL	0.585 ± 0.446	<DL	42 ± 1.811	<DL
	October	"	0.657 ± 0.167	"	36 ± 3.325	"
	November	"	1.168 ± 0.305	"	29 ± 0.614	0.099 ± 0.037
	December	"	0.425 ± 0.259	"	49 ± 12	<DL
	January	"	0.876 ± 0.081	0.126 ± 0.004	36 ± 3.325	"
	February	"	0.724 ± 0.027	0.135 ± 0.002	44 ± 3.864	"
	Mean	<DL	0.739 ± 0.214	0.131 ± 0.003	39 ± 4.125	0.099 ± 0.037
	Range	<DL	0.425-1.168	<DL-0.135	29 - 49	<DL-0.099
WWTP-B	September	<DL	0.293 ± 0.074	<DL	45 ± 3.864	<DL
	October	"	0.451 ± 0.006	"	42 ± 1.812	"
	November	"	<DL	"	28 ± 0.361	"
	December	"	0.66 ± 0.129	"	31 ± 1.77	"
	January	"	0.413 ± 0.201	0.078 ± 0.003	43 ± 14	"
	February	"	0.362 ± 0.038	0.122 ± 0.001	49 ± 3.197	"
	Mean	<DL	0.436 ± 0.25	0.1 ± 0.002	40 ± 9.48	<DL
	Range	<DL	<DL-0.66	<DL-0.122	28 - 49	<DL
WWTP-C	September	<DL	0.507 ± 0.047	<DL	36 ± 3.325	<DL
	October	"	0.635 ± 0.015	"	44 ± 3.864	0.065 ± 0.02
	November	"	0.612 ± 0.356	"	42 ± 1.811	<DL
	December	"	0.362 ± 0.038	"	49 ± 3.197	"

January	"	0.437 ± 0.125	0.124 ± 0.002	29 ± 0.614	"
February	"	0.62 ± 0.084	0.128 ± 0	70 ± 1.201	"
Mean	<DL	0.529 ± 0.101	0.504 ± 0.001	45 ± 2.335	0.065 ± 0.02
Range	<DL	0.362-0.635	<DL-0.128	29 - 70	<DL-0.065

<DL: Below Detection Limit.

Table S6. Levels of heavy metals in wastewater and water from WWTP-A (mg L⁻¹).

Location	Month	Zn (mg L ⁻¹)	Cu (mg L ⁻¹)	Cd (mg L ⁻¹)	Fe (mg L ⁻¹)	Pb (mg L ⁻¹)	Total (mg L ⁻¹)
Influent	September	<DL	<DL	<DL	6.588 ± 3.139	<DL	6.59 ± 2.22
	October	"	"	"	0.712 ± 0.234	"	0.71 ± 0.17
	November	"	"	"	0.414 ± 0.03	"	0.41 ± 0.16
	December	"	"	"	0.595 ± 0.157	"	0.60 ± 0.15
	January	<DL	0.03 ± 0.006	0.101 ± 0	<DL	"	0.14 ± 0.06
	February	"	0.053 ± 0	0.122 ± 0.002	"	"	0.17 ± 0.05
	Mean	<DL	0.042 ± 0.003	0.112 ± 0.001	2.077 ± 0.89	<DL	1.436 ± 0.595
	Range	<DL	<DL-0.053	<DL-0.122	<DL-6.588	<DL	
Effluent	September	<DL	<DL	<DL	0.292 ± 0.038	<DL	<DL
	October	"	"	"	0.33 ± 0.015	"	0.33 ± 0.18
	November	"	"	"	0.233 ± 0.054	"	0.23 ± 0.17
	December	"	"	"	0.263 ± 0.002	"	0.26 ± 0.15
	January	"	0.036 ± 0.004	0.098 ± 0.001	<DL	"	0.14 ± 0.06
	February	"	0.047 ± 0	0.129 ± 0	"	"	0.18 ± 0.05
	Mean	<DL	0.042 ± 0.002	0.114 ± 0.001	0.28 ± 0.027	<DL	0.238 ± 0.059
	Range	<DL	<DL-0.047	<DL-0.129	<DL-0.33	<DL	
Upstream	% RE	N/A	0	0	86.6	N/A	N/A
	September	<DL	<DL	<DL	0.878 ± 0.217	<DL	<DL
	October	"	"	"	0.798 ± 0.057	"	0.80 ± 0.19
	November	"	"	"	0.576 ± 0.005	"	0.58 ± 0.16
	December	"	"	"	0.341 ± 0.024	"	0.34 ± 0.15
	January	"	0.025 ± 0.005	0.10 ± 0.001	<DL	"	0.13 ± 0.07
	February	"	0.057 ± 0.003	0.123 ± 0	"	"	0.18 ± 0.05
	Mean	<DL	0.041 ± 0.004	0.112 ± 0.001	0.648 ± 0.076	<DL	0.483 ± 0.052
Downstream	Range	<DL	<DL-0.057	<DL-0.123	<DL-0.878	<DL	
	September	<DL	<DL	<DL	0.711 ± 0.415	<DL	<DL
	October	"	"	"	0.634 ± 0.004	"	0.63 ± 0.17
	November	"	"	"	0.629 ± 0	"	0.63 ± 0.15
	December	"	"	"	0.401 ± 0.045	"	0.40 ± 0.14
	January	"	0.042 ± 0.037	0.105 ± 0.084	<DL	"	0.15 ± 0.07
	February	"	0.057 ± 0.001	0.123 ± 0	"	"	0.19 ± 0.05
	Mean	<DL	0.05 ± 0.019	0.114 ± 0.042	0.594 ± 0.116	<DL	0.45 ± 0.1
	Range	<DL	<DL-0.058	<DL-0.125	<DL-0.711	<DL	

<DL: Below Detection Limit; %RE: Percentage removal efficiency; N/A: Not applicable.

Table S7. Levels of heavy metals in wastewater and water from WWTP-B (mg L⁻¹).

Location	Month	Zn (mg L ⁻¹)	Cu (mg L ⁻¹)	Cd (mg L ⁻¹)	Fe (mg L ⁻¹)	Pb (mg L ⁻¹)	Total (mg L ⁻¹)
Influent	September	<DL	<DL	<DL	<DL	<DL	<DL
	October	"	"	"	0.627 ± 0.061	"	"
	November	"	"	"	0.396 ± 0.02	"	"
	December	"	"	"	0.556 ± 0.016	"	"
	January	"	0.025 ± 0.022	0.09 ± 0.002	"	"	0.12 ± 0.09
	February	"	0.069 ± 0.002	0.125 ± 0.002	2.257 ± 0.438	"	2.46 ± 0.84
	Mean	<DL	0.047 ± 0.012	0.108 ± 0.002	0.959 ± 0.134	<DL	0.691 ± 0.094
	Range	<DL	<DL-0.069	<DL-0.125	<DL-2.257	<DL	

Effluent	September	<DL	<DL	<DL	0.636 ± 0.012	<DL	<DL
	October	"	"	"	0.315 ± 0.254	"	"
	November	"	"	"	0.473 ± 0.07	"	"
	December	"	"	"	0.429 ± 0.001	"	"
	January	"	0.026 ± 0.003	0.097 ± 0.003	"	"	0.13 ± 0.09
	February	"	0.046 ± 0.002	0.123 ± 0.001	"	"	0.17 ± 0.05
	Mean	<DL	0.036 ± 0.003	0.11 ± 0.002	0.463 ± 0.084	<DL	0.358 ± 0.058
	Range	<DL	<DL-0.046	<DL-0.123	<DL-0.636	<DL	
	% RE	N/A	23.4	0	34.7	N/A	N/A

<DL: Below Detection Limit; %RE: Percentage removal efficiency; N/A: Not applicable.

Table S8. Levels of heavy metals in wastewater and water from WWTP-C (mg.L⁻¹).

Location	Month	Zn (mg L ⁻¹)	Cu (mg L ⁻¹)	Cd (mg L ⁻¹)	Fe (mg L ⁻¹)	Pb (mg L ⁻¹)	Total (mg L ⁻¹)
Influent	September	<DL	<DL	<DL	0.877 ± 0.19	<DL	<DL
	October	"	"	"	1.805 ± 0.381	"	"
	November	"	"	"	0.454 ± 0.001	"	"
	December	"	"	"	0.412 ± 0.065	"	"
	January	"	0.029 ± 0.003	0.103 ± 0.003	"	"	0.13 ± 0.08
	February	"	0.049 ± 0.002	0.129 ± 0.001	"	"	0.18 ± 0.05
	Mean	<DL	0.039 ± 0.003	0.116 ± 0.002	0.887 ± 0.159	<DL	0.643 ± 0.108
	Range	<DL	<DL-0.049	<DL-0.129	<DL-1.806	<DL	-
	% RE	N/A	0	0	56.9	N/A	N/A
Effluent	September	<DL	<DL	<DL	0.557 ± 0.071	<DL	<DL
	October	"	"	"	0.273 ± 0.025	"	"
	November	"	"	"	0.356 ± 0.007	"	"
	December	"	"	"	0.342 ± 0.01	"	"
	January	"	0.028 ± 0.001	0.107 ± 0.004	<DL	"	0.14 ± 0.09
	February	"	0.06 ± 0.003	0.129 ± 0	"	"	0.19 ± 0.05
	Mean	<DL	0.044 ± 0.002	0.118 ± 0.002	0.382 ± 0.028	<DL	0.309 ± 0.02
	Range	<DL	<DL-0.06	<DL-0.129	<DL-0.557	<DL	-
	% RE	N/A	0	0	56.9	N/A	N/A
Downstream	September	<DL	<DL	<DL	0.367 ± 0.048	<DL	<DL
	October	"	"	"	0.61 ± 0.223	"	"
	November	"	"	"	0.37 ± 0.033	"	"
	December	"	"	"	0.332 ± 0.046	"	"
	January	"	0.035 ± 0.003	0.109 ± 0.001	"	"	0.15 ± 0.09
	February	"	0.05 ± 0.001	0.132 ± 0	"	"	0.18 ± 0.05
	Mean	<DL	0.043 ± 0.002	0.121 ± 0.001	0.42 ± 0.088	<DL	0.334 ± 0.059
	Range	<DL	<DL-0.05	<DL-0.132	<DL-0.61	<DL	-
	% RE	N/A	0	0	56.9	N/A	N/A

<DL: Below Detection Limit; %RE: Percentage removal efficiency; N/A: Not applicable.