Ecological Risk Assessment and Source Contributions of Heavy Metals in the Sediment of the Chan Thnal Reservoir, Kampong Speu, Cambodia

Lita Chheang [1], Pichet Limsuwan [2], Nisakorn Thongkon [1], Tongchai Sriwiriyarat [3] and Sudtida Pliankarom [4*]

[1] Department of Chemistry, Faculty of Science, King Mongkut's University of Technology Thonburi, Bangkok 10140, Thailand; lita.chheang@mail.kmutt.ac.th (L.C.); nisakorn.tho@kmutt.ac.th (N.T.)
[2] Department of Physics, Faculty of Science, King Mongkut's University of Technology Thonburi, Bangkok 10140, Thailand; pichet.lim@kmutt.ac.th
[2] Department of Chemical Engineering, Faculty of Engineering, Burapha University, Chonburi 20131, Thailand; sriwiri@buu.ac.th
[4] Chemistry for Green Society and Healthy Living Research Unit, Faculty of Science, King Mongkut's University of Technology Thonburi, Bangkok 10140, Thailand
*Correspondence: sudtida.tha@mail.kmutt.ac.th; Tel.: +66-24-709-560

Supplementary Data

Table S1. Heavy metal concentrations in the water of the Chan Thnal reservoir and the acceptable levels

Locations	Mean Concentrations (μg/L) in Water Samples								
	Cd	**Cu**	**Zn**	**Pb**	**As**	**Cr**	**Mn**	**Co**	**Fe**
L1	0.72^{a}	10.11^{a,b}	72.63^{b}	15.60^{a,b}	6.26^{b}	7.90^{a}	0.28^{b,c}	5.57^{a,b}	661.90^{a}
L2	0.72^{a}	3.58^{c}	98.92^{a}	12.69^{c}	7.18^{a,b}	6.07^{c}	0.30^{b}	5.41^{c}	495.20^{b}
L3	0.83	4.98^{c}	43.57^{c}	16.19^{a}	7.10^{a,b}	6.19^{b,c}	0.29^{b,c}	5.45^{b,c}	351.50^{c}
L4	0.77^{a}	9.93^{a,b}	60.08^{b}	16.96^{a}	4.72^{c}	6.92^{a,b,c}	0.18^{d}	5.45^{b,c}	199.71d
L5	0.83^{a}	8.30^{b}	58.69^{b,c}	14.136^{b,c}	6.84^{a,b}	7.37^{a,b}	0.40^{a}	5.63^{a}	508.10^{b}
L6	0.80^{a}	10.92^{a}	110.^{24a}	15.44^{a,b}	7.63^{a}	7.56^{a}	0.23^{c,d}	5.60^{a}	610.80^{a}
Average ± SD	0.78 ± 0.06	8.0 ± 0.839	74.02 ± 7.163	15.17 ± 0.922	6.620± 0.432	7.00 ± 0.651	0.28 ± 0.025	5.52 ± 0.063	471.20 ± 46.640
WHO 2017[1]	3	2000	1000	10	10	50	100	4	300

1 refers to the World Health Organization regulatory limits for water [1]

Data are presented as the mean values; SD means standard deviation, ND means not detected. Values with similar letters refer to "not significantly different", where a, b, c, d, e, f refer to "significantly different" ($p < 0.05$) with the following order: a < b < c < d < e < f (Minitab 16 ANOVA one-way test).

Figure S1. Open dumping and outdoor chemical storage in the study area.

Figure S2. Direct discharge from municipal area and poultry farm in the study area.

Figure S3. Road dust, vehicle exhaust and open burning in the study area.