

High Ecological Health Risks of Potentially Toxic Metals in Polluted Drainage Sediments: Is There a Need for Public Concern during Flash Floods?

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Table S1. Site descriptions of surface sediments were collected from the Malacca Industrial Area and Malacca River drainages.

Sampling site no.	Sites	GPS	Description of sampling site
1	Drainage	2.26843; 102.29511	(Power Weld) Near an electrode products factory.
2	Drainage	2.25786; 102.29331	(Everts) Near a balloon manufacture factory
3	River	2.24507; 102.24832	Batu Berendam Bridge at Malacca River, near an industrial area.
4	River	2.24555; 102.24602	Malacca River; is an industrial area and residential area.
5	River	2.20824; 102.25157	Hang Jebat Bridge at Malacca River; is an urban residential and tourist area.
6	River	2.24664; 102.23970	Malim Bridge (Jambatan Jalan Industri Malim Jaya) at Malacca River; industrial area, and residential areas.
7	Drainage	2.26003; 102.24206	(Omega) Near a semi-conductor factory
8	Drainage	2.24593; 102.25669	(Sam Chang) Near a semiconductor factory
9	Drainage	2.26887; 102.23110	(Golsta) Near a chemical production factory
10	Drainage	2.26912; 102.23096	(El Mega) Near an aluminium production factory
11	Coast	2.11398; 102.14708	Malacca Jetty; An active jetty.
12	Coast	2.184038; 102.24393	Bandar Hilir beach; is a rocky and sandy beach

Table S2. Heavy metals analysis recovery percentages of the certified reference materials (CRM).

CRM	Cd	Cu	Fe	Ni	Pb	Zn
TH-1 Sediment Canada	102%	92.9%	95.6%	112%	100%	110%
SRM 1547	NA	NA	106%	NA	NA	115%
IAEA Soil-5	156%	91.3%	NA	103%	116%	94.8%
NSC DC73319 Soil China	111%	85.0%	NA	NA	99.8%	99.7%
MESS-3 NRC	NA	93.1%	NA	102%	116%	82.8%

NA—data not available.

Table S3. Overall statistics of percentages (%) of fractions of EFLE (F1), acid-reducible (F2), oxidizable-organic (F3), resistant (F4), non-resistant (NR), and ratios of non-resistant to resistant (NR/R), values of enrichment factor (EF), geoaccumulation index (I_{geo}), contamination factor (CF), ecological risk (ER) for Cd, Cu, Ni, Pb, and Zn, of sediments, collected from the coast (N= 2), river (N= 6) and drainage (N= 6) in Malacca, Peninsular Malaysia.

Cd coast	F1%	F2%	F3%	F4%	NR%	NR/R	EF	I_{geo}	CF	ER
Min	6.91	6.16	1.75	80.99	15.00	0.18	8.71	2.65	9.43	283
Max	7.97	9.29	1.93	85.00	19.01	0.23	11.1	3.24	14.21	426
Mean	7.44	7.72	1.84	82.99	17.01	0.21	9.89	2.95	11.82	355
Median	7.44	7.72	1.84	82.99	17.01	0.21	9.89	2.95	11.82	355
SD	0.75	2.21	0.13	2.84	2.84	0.04	1.67	0.42	3.38	102
SE	0.53	1.57	0.09	2.01	2.01	0.02	1.18	0.29	2.39	71.8
Cd drainage	F1%	F2%	F3%	F4%	NR%	NR/R	EF	I_{geo}	CF	ER
Min	5.85	29.50	15.87	13.56	60.32	1.52	16.5	4.05	24.80	744
Max	15.35	61.17	24.14	39.68	86.44	6.37	54.3	5.52	68.72	2062
Mean	11.00	38.83	19.90	30.27	69.74	2.74	28.2	4.62	39.20	1176
Median	10.68	35.63	19.26	32.04	67.96	2.13	22.2	4.59	36.27	1088
SD	3.25	11.52	3.07	9.02	9.02	1.81	13.9	0.53	16.04	481
SE	1.33	4.70	1.25	3.68	3.68	0.74	5.70	0.22	6.55	196
Cd river	F1%	F2%	F3%	F4%	NR%	NR/R	EF	I_{geo}	CF	ER
Min	11.17	37.86	23.30	22.34	72.33	2.61	15.4	3.62	18.43	553
Max	14.22	39.88	25.00	27.67	77.66	3.48	40.8	3.95	23.24	697
Mean	13.14	38.96	23.88	24.02	75.98	3.20	29.5	3.84	21.52	646
Median	13.59	39.05	23.62	23.04	76.97	3.35	30.8	3.89	22.21	666
SD	1.37	0.87	0.76	2.49	2.49	0.40	10.9	0.15	2.16	64.8
SE	0.68	0.43	0.38	1.24	1.24	0.20	5.48	0.07	1.08	32.4
Cu coast	F1%	F2%	F3%	F4%	NR%	NR/R	EF	I_{geo}	CF	ER
Min	0.92	0.10	18.70	59.55	24.06	0.32	0.52	-1.42	0.56	2.81
Max	1.87	3.50	39.44	75.94	40.45	0.68	2.40	1.04	3.08	15.38
Mean	1.40	1.80	29.07	67.75	32.26	0.50	1.46	-0.19	1.82	9.10
Median	1.40	1.80	29.07	67.75	32.26	0.50	1.46	-0.19	1.82	9.10
SD	0.67	2.40	14.67	11.59	11.59	0.25	1.33	1.74	1.78	8.89
SE	0.47	1.70	10.37	8.20	8.20	0.18	0.94	1.23	1.26	6.29
Cu drainage	F1%	F2%	F3%	F4%	NR%	NR/R	EF	I_{geo}	CF	ER
Min	0.36	0.18	43.15	27.61	49.64	0.99	5.17	2.25	7.13	35.66
Max	28.72	1.50	64.49	50.36	72.39	2.62	92.37	6.30	118.15	590.73
Mean	6.66	0.82	53.73	38.79	61.21	1.68	35.29	4.02	47.16	235.81
Median	1.19	0.87	54.94	37.43	62.56	1.69	9.99	3.44	16.47	82.35
SD	11.20	0.59	7.63	8.17	8.17	0.58	42.76	1.84	54.71	273.54
SE	4.57	0.24	3.12	3.34	3.34	0.24	17.46	0.75	22.33	111.67
Cu River	F1%	F2%	F3%	F4%	NR%	NR/R	EF	I_{geo}	CF	ER
Min	1.04	0.63	31.95	21.84	37.08	0.59	1.65	-0.18	1.32	6.61
Max	3.59	2.76	73.22	62.92	78.16	3.58	71.28	4.76	40.56	202.80
Mean	2.27	1.76	55.24	40.74	59.26	1.86	24.78	2.62	16.31	81.55
Median	2.22	1.82	57.89	39.09	60.91	1.63	13.10	2.94	11.68	58.39
SD	1.16	0.95	17.65	17.71	17.71	1.30	31.50	2.06	16.96	84.82
SE	0.58	0.48	8.82	8.85	8.85	0.65	15.75	1.03	8.48	42.41
Ni coast	F1%	F2%	F3%	F4%	NR%	NR/R	EF	I_{geo}	CF	ER
Min	2.48	6.57	12.58	61.43	31.15	0.45	0.83	-0.75	0.89	1.79
Max	3.57	15.00	29.51	68.85	38.57	0.63	1.20	0.03	1.53	3.07
Mean	3.03	10.79	21.05	65.14	34.86	0.54	1.01	-0.36	1.21	2.43
Median	3.03	10.79	21.05	65.14	34.86	0.54	1.01	-0.36	1.21	2.43
SD	0.77	5.96	11.97	5.25	5.25	0.13	0.26	0.55	0.45	0.91
SE	0.54	4.21	8.47	3.71	3.71	0.09	0.18	0.39	0.32	0.64
Ni Drainage	F1%	F2%	F3%	F4%	NR%	NR/R	EF	I_{geo}	CF	ER
Min	0.13	3.10	24.89	20.23	36.11	0.57	0.93	-0.10	1.40	2.80
Max	19.72	17.23	55.57	63.89	79.77	3.94	34.22	4.93	45.70	91.40
Mean	5.95	9.44	41.93	42.68	57.32	1.72	9.02	2.21	12.40	24.80
Median	3.30	8.28	45.20	40.21	59.80	1.49	4.71	2.30	7.39	14.79
SD	7.33	4.92	12.23	16.72	16.72	1.24	12.51	1.66	16.56	33.11
SE	2.99	2.01	4.99	6.83	6.83	0.51	5.11	0.68	6.76	13.52
Ni river	F1%	F2%	F3%	F4%	NR%	NR/R	EF	I_{geo}	CF	ER
Min	2.12	16.46	47.50	12.72	72.52	2.64	0.88	-1.09	0.70	1.41
Max	17.91	22.89	58.29	27.48	87.28	6.86	20.98	2.99	11.94	23.87
Mean	7.17	18.87	53.35	20.61	79.39	4.29	6.69	0.73	4.23	8.47
Median	4.33	18.07	53.81	21.11	78.89	3.83	2.45	0.51	2.15	4.30
SD	7.23	2.94	4.50	6.50	6.50	1.88	9.56	1.69	5.18	10.37
SE	3.62	1.47	2.25	3.25	3.25	0.94	4.78	0.85	2.59	5.18
Pb coast	F1%	F2%	F3%	F4%	NR%	NR/R	EF	I_{geo}	CF	ER
Min	7.15	0.01	22.86	60.84	37.23	0.59	1.75	0.34	1.90	9.47
Max	10.40	7.21	28.74	62.77	39.16	0.64	2.73	1.22	3.50	17.49

Mean	8.77	3.61	25.80	61.81	38.20	0.61	2.24	0.78	2.70	13.48
Median	8.77	3.61	25.80	61.81	38.20	0.61	2.24	0.78	2.70	13.48
SD	2.30	5.09	4.16	1.36	1.36	0.04	0.69	0.62	1.13	5.67
SE	1.62	3.60	2.94	0.97	0.97	0.03	0.49	0.44	0.80	4.01
Pb drainage	F1%	F2%	F3%	F4%	NR%	NR/R	EF	Igeo	CF	ER
Min	1.03	8.06	5.46	29.45	27.75	0.38	2.69	1.15	3.32	16.62
Max	5.40	25.86	48.06	72.25	70.55	2.40	13.52	3.59	18.06	90.29
Mean	3.15	16.64	26.57	53.65	46.35	1.02	5.61	2.18	7.94	39.70
Median	3.16	17.01	29.24	55.53	44.48	0.81	4.30	2.13	6.67	33.37
SD	1.74	5.82	16.62	14.17	14.17	0.71	4.03	0.85	5.31	26.54
SE	0.71	2.38	6.79	5.79	5.79	0.29	1.64	0.35	2.17	10.83
Pb river	F1%	F2%	F3%	F4%	NR%	NR/R	EF	Igeo	CF	ER
Min	1.75	13.91	41.36	28.85	58.29	1.40	3.65	1.54	4.38	21.88
Max	2.75	19.64	51.99	41.71	71.15	2.47	9.35	1.83	5.32	26.59
Mean	2.38	16.18	48.50	32.96	67.04	2.10	6.81	1.73	4.99	24.97
Median	2.50	15.58	50.32	30.64	69.36	2.27	7.12	1.78	5.14	25.71
SD	0.43	2.62	4.99	5.97	5.97	0.49	2.43	0.13	0.42	2.10
SE	0.22	1.31	2.49	2.98	2.98	0.24	1.21	0.06	0.21	1.05
Zn coast	F1%	F2%	F3%	F4%	NR%	NR/R	EF	Igeo	CF	ER
Min	1.32	6.34	9.15	67.34	17.97	0.22	0.62	-1.16	0.67	0.67
Max	1.75	21.76	10.32	82.03	32.66	0.49	1.88	0.69	2.42	2.42
Mean	1.54	14.05	9.73	74.68	25.32	0.36	1.25	-0.23	1.54	1.55
Median	1.54	14.05	9.73	74.68	25.32	0.36	1.25	-0.23	1.54	1.55
SD	0.30	10.90	0.83	10.39	10.39	0.19	0.89	1.31	1.23	1.24
SE	0.21	7.71	0.59	7.35	7.35	0.14	0.63	0.92	0.87	0.88
Zn drainage	F1%	F2%	F3%	F4%	NR%	NR/R	EF	Igeo	CF	ER
Min	7.12	21.80	23.50	15.16	77.33	3.41	2.97	1.57	4.45	4.45
Max	39.55	37.78	32.43	22.67	84.84	5.60	4.74	2.00	6.00	6.00
Mean	28.82	27.47	26.22	17.50	82.50	4.82	3.94	1.89	5.58	5.58
Median	31.87	26.08	25.13	17.21	82.80	4.81	4.00	1.93	5.72	5.72
SD	11.44	5.53	3.27	2.75	2.75	0.80	0.62	0.16	0.57	0.57
SE	4.67	2.26	1.34	1.12	1.12	0.33	0.25	0.07	0.23	0.23
Zn river	F1%	F2%	F3%	F4%	NR%	NR/R	EF	Igeo	CF	ER
Min	2.61	28.69	28.10	14.68	78.72	3.70	1.80	-0.05	1.45	1.45
Max	28.53	41.46	36.02	21.28	85.32	5.81	8.61	1.71	4.90	4.90
Mean	12.51	36.39	33.21	17.90	82.11	4.72	4.73	1.04	3.36	3.36
Median	9.45	37.70	34.35	17.81	82.19	4.68	4.24	1.24	3.54	3.55
SD	11.16	5.52	3.50	3.13	3.13	1.00	3.07	0.76	1.43	1.43
SE	5.58	2.76	1.75	1.57	1.57	0.50	1.54	0.38	0.72	0.72

Note: Min= minimum; Max= maximum; SD= standard deviation; SE= standard error.

Table S4: Overall statistics of the values of hazard quotient (HQ), and hazard index (HI), in the three exposure routes of Cd, Ni, Cu, Pb, and Zn in children (C) and adults (A) separated into coastal, drainage and river from the present study.

Cd coast	A HQ _{ing}	A HQ _{inh}	A HQ _{der}	A HI	C HQ _{ing}	C HQ _{inh}	C HQ _{der}	C HI
Min	1.42E-03	1.31E-07	4.34E-03	5.76E-03	1.16E-02	3.17E-07	1.86E-03	1.35E-02
Max	2.15E-03	1.97E-07	6.54E-03	8.69E-03	1.75E-02	4.78E-07	2.80E-03	2.03E-02
Mean	1.79E-03	1.64E-07	5.44E-03	7.22E-03	1.46E-02	3.98E-07	2.33E-03	1.69E-02
Median	1.79E-03	1.64E-07	5.44E-03	7.22E-03	1.46E-02	3.98E-07	2.33E-03	1.69E-02
SD	5.16E-04	4.67E-08	1.56E-03	2.07E-03	4.17E-03	1.14E-07	6.65E-04	4.81E-03
SE	3.65E-04	3.30E-08	1.10E-03	1.46E-03	2.95E-03	8.05E-08	4.70E-04	3.40E-03
Cd drainage								
Min	3.75E-03	3.44E-07	1.14E-02	1.52E-02	3.05E-02	8.35E-07	4.88E-03	3.54E-02
Max	1.04E-02	9.53E-07	3.16E-02	4.20E-02	8.46E-02	2.31E-06	1.35E-02	9.81E-02
Mean	5.93E-03	5.44E-07	1.80E-02	2.40E-02	4.82E-02	1.32E-06	7.71E-03	5.60E-02
Median	5.48E-03	5.04E-07	1.67E-02	2.22E-02	4.46E-02	1.22E-06	7.14E-03	5.18E-02
SD	2.43E-03	2.22E-07	7.38E-03	9.80E-03	1.98E-02	5.38E-07	3.15E-03	2.29E-02
SE	9.91E-04	9.08E-08	3.01E-03	4.00E-03	8.06E-03	2.20E-07	1.28E-03	9.35E-03
Cd river								
Min	2.79E-03	2.56E-07	8.48E-03	1.13E-02	2.27E-02	6.20E-07	3.63E-03	2.63E-02
Max	3.51E-03	3.22E-07	1.07E-02	1.42E-02	2.86E-02	7.82E-07	4.57E-03	3.32E-02
Mean	3.25E-03	2.99E-07	9.91E-03	1.32E-02	2.65E-02	7.24E-07	4.24E-03	3.07E-02
Median	3.35E-03	3.09E-07	1.02E-02	1.36E-02	2.74E-02	7.48E-07	4.38E-03	3.17E-02
SD	3.24E-04	2.98E-08	1.00E-03	1.30E-03	2.65E-03	7.30E-08	4.24E-04	3.10E-03
SE	1.62E-04	1.49E-08	5.02E-04	6.51E-04	1.33E-03	3.65E-08	2.12E-04	1.55E-03
Cu coast								
Min	2.97E-04	2.71E-08	3.02E-05	3.27E-04	2.42E-03	6.59E-08	1.29E-05	2.43E-03
Max	1.63E-03	1.49E-07	1.65E-04	1.79E-03	1.33E-02	3.61E-07	7.07E-05	1.33E-02
Mean	9.63E-04	8.81E-08	9.76E-05	1.06E-03	7.86E-03	2.13E-07	4.18E-05	7.86E-03
Median	9.63E-04	8.81E-08	9.76E-05	1.06E-03	7.86E-03	2.13E-07	4.18E-05	7.86E-03
SD	9.43E-04	8.62E-08	9.53E-05	1.03E-03	7.69E-03	2.09E-07	4.09E-05	7.69E-03
SE	6.66E-04	6.10E-08	6.74E-05	7.32E-04	5.44E-03	1.48E-07	2.89E-05	5.43E-03
Cu drainage								
Min	3.78E-03	3.45E-07	3.83E-04	4.16E-03	3.08E-02	8.37E-07	1.64E-04	3.09E-02
Max	6.26E-02	5.72E-06	6.35E-03	6.89E-02	5.09E-01	1.39E-05	2.72E-03	5.12E-01
Mean	2.50E-02	2.28E-06	2.54E-03	2.75E-02	2.03E-01	5.54E-06	1.09E-03	2.04E-01
Median	8.72E-03	7.97E-07	8.87E-04	9.59E-03	7.10E-02	1.93E-06	3.79E-04	7.14E-02
SD	2.90E-02	2.65E-06	2.94E-03	3.19E-02	2.36E-01	6.42E-06	1.26E-03	2.37E-01
SE	1.18E-02	1.08E-06	1.20E-03	1.30E-02	9.62E-02	2.62E-06	5.14E-04	9.68E-02
Cu River								
Min	7.00E-04	6.39E-08	7.11E-05	7.71E-04	5.70E-03	1.55E-07	3.04E-05	5.73E-03
Max	2.15E-02	1.96E-06	2.18E-03	2.37E-02	1.75E-01	4.76E-06	9.33E-04	1.76E-01
Mean	8.64E-03	7.88E-07	8.77E-04	9.53E-03	7.04E-02	1.91E-06	3.75E-04	7.07E-02
Median	6.19E-03	5.65E-07	6.28E-04	6.82E-03	5.04E-02	1.37E-06	2.69E-04	5.06E-02
SD	8.99E-03	8.20E-07	9.12E-04	9.91E-03	7.32E-02	1.99E-06	3.90E-04	7.36E-02
SE	4.50E-03	4.10E-07	4.56E-04	4.96E-03	3.66E-02	9.95E-07	1.95E-04	3.68E-02
Ni coast								
Min	1.23E-03	1.10E-07	1.39E-04	1.37E-03	1.00E-02	2.66E-07	5.94E-05	1.01E-02
Max	2.11E-03	1.88E-07	2.38E-04	2.35E-03	1.72E-02	4.57E-07	1.02E-04	1.73E-02
Mean	1.67E-03	1.49E-07	1.88E-04	1.86E-03	1.36E-02	3.62E-07	8.07E-05	1.37E-02
Median	1.67E-03	1.49E-07	1.88E-04	1.86E-03	1.36E-02	3.62E-07	8.07E-05	1.37E-02
SD	6.22E-04	5.52E-08	7.00E-05	6.93E-04	5.09E-03	1.35E-07	3.01E-05	5.09E-03
SE	4.40E-04	3.90E-08	4.95E-05	4.90E-04	3.60E-03	9.55E-08	2.13E-05	3.60E-03
Ni Drainage								
Min	1.93E-03	1.72E-07	2.17E-04	2.14E-03	1.57E-02	4.17E-07	9.29E-05	1.58E-02
Max	6.30E-02	5.61E-06	7.10E-03	7.01E-02	5.13E-01	1.36E-05	3.04E-03	5.16E-01
Mean	1.71E-02	1.52E-06	1.93E-03	1.90E-02	1.39E-01	3.69E-06	8.25E-04	1.40E-01
Median	1.02E-02	9.08E-07	1.15E-03	1.13E-02	8.30E-02	2.21E-06	4.92E-04	8.35E-02
SD	2.28E-02	2.03E-06	2.57E-03	2.54E-02	1.86E-01	4.93E-06	1.10E-03	1.87E-01
SE	9.32E-03	8.30E-07	1.05E-03	1.04E-02	7.59E-02	2.01E-06	4.50E-04	7.63E-02
Ni river								
Min	9.70E-04	8.65E-08	1.09E-04	1.08E-03	7.90E-03	2.10E-07	4.68E-05	7.95E-03
Max	1.64E-02	1.47E-06	1.85E-03	1.83E-02	1.34E-01	3.56E-06	7.93E-04	1.35E-01
Mean	5.82E-03	5.21E-07	6.57E-04	6.49E-03	4.75E-02	1.26E-06	2.81E-04	4.79E-02

Median	2.96E-03	2.64E-07	3.33E-04	3.29E-03	2.41E-02	6.40E-07	1.43E-04	2.43E-02
SD	7.12E-03	6.39E-07	8.03E-04	7.95E-03	5.82E-02	1.55E-06	3.44E-04	5.86E-02
SE	3.56E-03	3.19E-07	4.02E-04	3.97E-03	2.91E-02	7.73E-07	1.72E-04	2.93E-02
Pb coast	A HQ _{ing}	A HQ _{inh}	A HQ _{der}	A HI	C HQ _{ing}	C HQ _{inh}	C HQ _{der}	C HI
Min	1.36E-02	1.24E-06	2.77E-03	1.64E-02	1.11E-01	3.02E-06	1.18E-03	1.12E-01
Max	2.52E-02	2.30E-06	5.11E-03	3.03E-02	2.05E-01	5.58E-06	2.19E-03	2.07E-01
Mean	1.94E-02	1.77E-06	3.94E-03	2.34E-02	1.58E-01	4.30E-06	1.69E-03	1.60E-01
Median	1.94E-02	1.77E-06	3.94E-03	2.34E-02	1.58E-01	4.30E-06	1.69E-03	1.60E-01
SD	8.20E-03	7.50E-07	1.65E-03	9.83E-03	6.65E-02	1.81E-06	7.14E-04	6.72E-02
SE	5.80E-03	5.30E-07	1.17E-03	6.95E-03	4.70E-02	1.28E-06	5.05E-04	4.75E-02
Pb drainage								
Minimum	2.39E-02	2.18E-06	4.86E-03	2.88E-02	1.95E-01	5.30E-06	2.08E-03	1.97E-01
Maximum	1.30E-01	1.19E-05	2.64E-02	1.56E-01	1.06E+00	2.88E-05	1.13E-02	1.07E+00
Mean	5.71E-02	5.22E-06	1.16E-02	6.87E-02	4.65E-01	1.27E-05	4.97E-03	4.71E-01
Median	4.80E-02	4.39E-06	9.73E-03	5.78E-02	3.91E-01	1.07E-05	4.17E-03	3.96E-01
SD	3.82E-02	3.50E-06	7.76E-03	4.58E-02	3.12E-01	8.46E-06	3.32E-03	3.15E-01
SE	1.56E-02	1.43E-06	3.17E-03	1.87E-02	1.27E-01	3.46E-06	1.36E-03	1.28E-01
Pb river								
Min	3.15E-02	2.87E-06	6.39E-03	3.79E-02	2.56E-01	6.98E-06	2.74E-03	2.59E-01
Max	3.83E-02	3.49E-06	7.77E-03	4.60E-02	3.12E-01	8.48E-06	3.32E-03	3.15E-01
Mean	3.59E-02	3.28E-06	7.30E-03	4.32E-02	2.93E-01	7.96E-06	3.12E-03	2.96E-01
Median	3.70E-02	3.38E-06	7.51E-03	4.45E-02	3.01E-01	8.19E-06	3.22E-03	3.05E-01
SD	3.03E-03	2.77E-07	6.16E-04	3.62E-03	2.50E-02	6.69E-07	2.60E-04	2.50E-02
SE	1.52E-03	1.39E-07	3.08E-04	1.81E-03	1.25E-02	3.34E-07	1.30E-04	1.25E-02
Zn coast	A HQ _{ing}	A HQ _{inh}	A HQ _{der}	A HI	C HQ _{ing}	C HQ _{inh}	C HQ _{der}	C HI
Min	1.72E-04	1.58E-08	2.63E-05	1.99E-04	1.40E-03	3.84E-08	1.12E-05	1.42E-03
Max	6.21E-04	5.70E-08	9.45E-05	7.15E-04	5.05E-03	1.38E-07	4.04E-05	5.09E-03
Mean	3.97E-04	3.64E-08	6.04E-05	4.57E-04	3.22E-03	8.82E-08	2.58E-05	3.26E-03
Median	3.97E-04	3.64E-08	6.04E-05	4.57E-04	3.22E-03	8.82E-08	2.58E-05	3.26E-03
SD	3.17E-04	2.91E-08	4.82E-05	3.65E-04	2.58E-03	7.04E-08	2.06E-05	2.60E-03
SE	2.25E-04	2.06E-08	3.41E-05	2.58E-04	1.82E-03	4.98E-08	1.46E-05	1.84E-03
Zn drainage								
Min	1.14E-03	1.05E-07	1.74E-04	1.32E-03	9.31E-03	2.55E-07	7.45E-05	9.39E-03
Max	1.54E-03	1.42E-07	2.35E-04	1.78E-03	1.26E-02	3.43E-07	1.00E-04	1.27E-02
Mean	1.43E-03	1.32E-07	2.18E-04	1.65E-03	1.17E-02	3.19E-07	9.32E-05	1.18E-02
Median	1.47E-03	1.35E-07	2.24E-04	1.69E-03	1.20E-02	3.27E-07	9.56E-05	1.21E-02
SD	1.47E-04	1.35E-08	2.23E-05	1.67E-04	1.20E-03	3.24E-08	9.44E-06	1.21E-03
SE	6.02E-05	5.51E-09	9.08E-06	6.84E-05	4.89E-04	1.32E-08	3.85E-06	4.93E-04
Zn river								
Min	3.72E-04	3.42E-08	5.67E-05	4.29E-04	3.03E-03	8.30E-08	2.43E-05	3.06E-03
Max	1.26E-03	1.16E-07	1.92E-04	1.45E-03	1.02E-02	2.80E-07	8.20E-05	1.03E-02
Mean	8.63E-04	7.93E-08	1.31E-04	9.95E-04	7.01E-03	1.92E-07	5.62E-05	7.07E-03
Median	9.10E-04	8.35E-08	1.39E-04	1.05E-03	7.40E-03	2.03E-07	5.93E-05	7.47E-03
SD	3.69E-04	3.40E-08	5.62E-05	4.25E-04	2.98E-03	8.19E-08	2.40E-05	3.01E-03
SE	1.84E-04	1.70E-08	2.81E-05	2.12E-04	1.49E-03	4.09E-08	1.20E-05	1.50E-03