

Table 1: Estimated Background Range for 29 Target Elements in Hawai'i Soils

Element (mg/kg)	HDOH EAL ^a	EBA Dataset Range ^b	Background					
			Range (min–max) ^c	BTV ^d	UBC ^e	Mode ^f	95% UCL ^g	95th Per-centile
Target Elements with Established EALs								
Antimony	8.2	0.004–31.5U	0.004–2.4	2.4	2.4	0.27	0.7	1.43
Arsenic	23	0.3–283.8	0.3–50	50	24	2.20	11	23.6
Barium	15,000	4.5–926	4.5–926	926	694	120	242	607
Beryllium	160	0.05–3.82	0.05–3.82	3.82	3.0	0.36	1.3	2.83
Cadmium	70	0.02–17	0.02–17	17	2.3	1.10	2.6	4.6
Chromium	N/A ^h	8.52–3,180	8.52–3,180	3,180	1,145	120	365	1,010
Cobalt	23	0.69–113.5	0.69–113.5	113.5	80	28.0	36.4	71.2
Copper	3,100	2.38–450	2.38–450	450	252	43	98.5	204
Lead	200	0.76–380	0.76–72.8	72.8	73	12.0	21.3	54.2
Mercury	23	0.017U–1.4	0.017U–1.4	1.4	0.72	0.12	0.25	0.65
Molybdenum	390	0.06–4	0.06–4.0	4.0	4.0	0.06	0.94	2.20
Nickel	3,800	2.1–767.2	2.1–767	767	410	110	179	340
Selenium	390	0.24–12.2	0.4–12.2	12.2	7.1	1.5	2.4	5.27
Silver	390	0.02–5	0.02–2.9	2.9	1.5	0.06	0.57	1.17
Thallium	0.78	0.25U–15.05J	0.25U–15	15	0.25	N/A	N/A	N/A
Vanadium	390	0.25–1,090	0.25–1,090	1,090	770	110	301	720
Zinc	23,000	3.57–1,200	3.57–1,200	1,200	349	120	127	232
Target Elements with No Established EALs								
Aluminum	N/A	2,500–166,138	2,500–166,138	166,138	166,138	4,400	68,627	122,454
Calcium	N/A	31–77,208	31–77,208	77,208	77,208	6,200	10,611	29,680
Iron	N/A	1,713–260,082	1,713–260,082	260,082	260,082	44,000	108,013	225,097
Manganese	N/A	13–4,880	13–3,522	4,880	4,880	95	1,167	2,434
Strontium	N/A	2U–1,094	2U–1,094	1,094	1,094	22	219.7	435
Tin	N/A	0.6–10	0.6–10	10	10	7.2	5.1	8.8
Titanium	N/A	3,809–53,032	3,809–53,032	53,032	53,032	14,000	22,907	41,385
Tungsten	N/A	0.002–5.43	0.002–5.43	5.43	5.43	0.01	4.96	5.1
Additional Target Elements								
Magnesium	N/A	25U–68,611	25U–68,611	68,611	68,611	1,800	18,201	50,368
Potassium	N/A	170–10,178	170–10,850	10,178	10,178	1,400	2,958	4,338
Sodium	N/A	37–10,850	37–10,850	10,850	10,850	1,200	3,454	6,564
Phosphorus	N/A	63U–18,078	63U–18,078	18,078	18,078	1,500	2,276	7,430

J detect, estimated concentration

N/A not enough detection data to calculate background concentration ranges for thallium

U non-detect concentration, reporting limit value presented.

^a HDOH (2011) EAL: Table I-1, Unrestricted Direct Exposure Soil Action Levels (non carcinogens, HQ = 1)

^b Minimum and maximum concentrations in the full dataset, including non-detects and outliers.

^c Range of background concentration defined as the minimum to background threshold value.

^d Background threshold value: the maximum concentration that can be attributed to background conditions, which may or may not include natural outliers.

^e Upper bound concentration: upper limit of the range of background concentrations that fit a relatively continuous distribution and do not include any of the natural outliers.

^f Mode: 50th percentile (single concentration that occurs most often in the dataset)

^g 95th percentile upper confidence limit (UCL) estimated using EPA ProUCL software, v. 4.1.00. Value reported is ProUCL recommended 95% UCL that is most appropriate for the data distribution. See appendix B, Attachment 1 for the complete ProUCL calculation.

^h Direct Exposure Soil Action Level is defined only for chromium III and VI, not total chromium.