Residential Ash Assessment Method (RAAM) for Destroyed Structures - Soil Cleanup Goals Worksheet 2026[a] ppm

The red boxes indicate the most common metals found in residential structural ash confirmation soil sampling above health risk guidelines. The top three are arsenic, cadmium, and lead. Others include antimony, cobalt, copper, mercury, and zinc.	Cleanup Goals for United States EPA, Other States, and Internationally	Criteria	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Cadmium (Cd)	Chromium (Cr) Total	Chromium (Cr VI)	Cobalt (Co)	Copper (Cu)	Lead (Pb)	Lithium (Li)	Manganese (Mn)	Mercury (Hg) Elemental[c]	Molybdenum (Mo)	Nickel (Ni)	Selenium (Se)	Silver (Ag)	Thallium (Tl)	Vanadium (V)	Zinc (Zn)
	Typical **EPA 6020**[b] Practical Quantitation Limit (PQL)		2	1	1	0.5	0.1	0.1	1	0.2	0.5	2	1	0.1	0.2	0.2	2	1	5	0.2	0.02	2	5
	Typical **EPA 6020**[b] Method Detection Limits (MDL)		0.5	0.01	0.01	0.005	0.001	0.001	0.001	0.005	0.02	0.02	0.01	0.2	0.2	0.005	0.02	0.01	0.05	0.002	0.001	0.02	0.05
	Based on prior soil background studies, these metals may be natually occurring or anthropogenic[d]				Use Background[d]			Possible Background[d]			Possible Background[d]		Possible Background[d]			Possible Background[d]		Possible Background[d]			Possible Background[d]			
	US EPA Hazardous Waste Limit RCRA 8 Metals TCLP (mg/l)[e]	Federal Hazardous Waste Limits	N/A	N/A	5	N/A	N/A	1	5	N/A	N/A	N/A	5	N/A	N/A	0.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	US EPA Hazardous Waste Limit RCRA 8 Metals Trigger Value (20x Limit Value) (mg/kg)[f]	Federal Hazardous Waste Screening	N/A	N/A	100	N/A	N/A	20	100	N/A	N/A	N/A	100	N/A	N/A	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	US EPA RSL (mg/kg)[g]	Federal Health Risk	77000	31	0.68	15000	120	7.1	85000	0.95	23	3100	200	16	1800	7.1	390	820	390	390	0.78	390	23000
	California DTSC Hazardous Waste Limit TTLC CAM 17 Metals (mg/kg)[h]	State Hazardous Limits	N/A	500	50	10000	75	100	2500	500	8000	2500	1000	N/A	N/A	20	3500	2000	100	500	700	2400	5000
	California DTSC HERO CAM 17 Metals (mg/kg)[i]	State Health Risk - Human	N/A	N/A	0.032	N/A	16	7.1	N/A	0.3	N/A	N/A	80	N/A	N/A	0.67	N/A	820	N/A	N/A	N/A	N/A	N/A
	Hawai'i Department of Health Unrestricted Direct Exposure Soil EALs[j]	Unrestricted Soil Levels	N/A	6.3	22	N/A	N/A	1.5	N/A	N/A	4.7	620	200	79	5800	23	N/A	310	N/A	N/A	N/A	N/A	1100
	Oregon Department of Environmental Quality (DEQ) Risk Based Levels, 2026[k]	Risk Base Levels	N/A	N/A	19	15000	N/A	7.1	120000	N/A	23	N/A	100	N/A	N/A	23	N/A	N/A	390	390	N/A	N/A	1100
	Canadian Council of Ministers of the Environment for Residential and Parkland (mg/kg dry weight)[l]	Soil Quality Guidelines	No Data	20	12	500	4	10	No Data	0.4	50	63	140	No Data	No Data	6.6	10	45	1	20	1	130	250
	Selected Cleanup Limits		**77000**	**31**	**Background**	**10000**	**16**	**7.1**	**2500**	**0.3 (CA) or 0.95**	**Background or 23**	**2500**	**80**	**16**	**1800**	**0.67 (CA) or 7.1**	**390**	**820**	**100**	**390**	**Background or 0.78**	**390**	**5000**
	Suggested RAAM Cleanup Goals for Soil Confirmation[m]		**77000**	**31**	**Background**	**9999**	**16**	**7.1**	**2499**	**0.3 (CA) or 0.95**	**Background or 23**	**2499**	**80**	**16**	**1800**	**0.67 (CA) or 7.1**	**390**	**820**	**99**	**390**	**Background or 0.78**	**390**	**4999**

All results presented in milligrams per kilogram (mg/kg) or milligrams per litter (mg/l) for RCRA 8 Metal.
N/A - Not available
CA - California Goal

Version 7b/2026

Notes:

[a] Developed by Todd Thalhamer, P.E., retired CalRecycle Operations Chief. The table is based on a review of over 100,000 soil confirmation samples from **residential** debris removal associated with wildfires and from background soils in California, USA, and internationally.
DO NOT use this table if the parcel or its use is commercial or industrial. Commercial and industrial structures require additional assessment and, based on use, may require semi-volatile, dioxin and furan, hydrocarbon, and other chemicals of concern to complete confirmation sampling.
Sites with significant amounts of asbestos may require additional confirmation sampling to ensure the asbestos has been removed.
Emerging Hazard: Be aware of lithium contamination from electric vehicles and storage batteries, and lead from solar panels.

[b] Recommend the use of EPA Method 6020 TTLC instead of Method 6010 TTLC due to a false positive response in arsenic. In EPA Method 6010, aluminum often causes false-positive arsenic results due to a direct spectral overlap. When analyzing samples with high aluminum loads such as moblie home parks, the aluminum causes overlap in the primary arsenic detection and will yield a false analyte response.

[c] Use EPA Method 7471 instead of Method 6020 for mercury assessment.

[d] Soil background values should be used if local or site-specific soil borings indicate the metal is naturally occurring or is from anthropogenic activities such as pesticide use, lead paint, or mercury tailings.

[e] US EPA Hazardous Waste Limit RCRA 8 Metals [https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-261/subpart-C/section-261.24]

[f] US EPA Hazardous Waste Limit RCRA 8 Metals Trigger Value (20x Limit Value) [https://archive.epa.gov/epawaste/hazard/web/html/faq_tclp.html]

[g] United States Environmental Protection Agency (USEPA) November 2024 residential soil Regional Screening Levels (RSLs). [https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables]

[h] California Dept of Toxics and Substances Control (DTSC) CAM-17 Metals using TTLC, California Code of Regulations, Title 22, Chapter 11, Article 3, used to define California regulated hazardous waste.

[i] Department of Toxic Substances Control (DTSC) Human and Ecological Risk Office (HERO) Note 3 April 2025 residential screening values. [https://dtsc.ca.gov/wp-content/uploads/sites/31/2025/04/HHRA-Note-3-Revised-April-2025.pdf]

[j] Hawai'i Department of Health Unrestricted Direct Exposure Soil EALs [https://health.hawaii.gov/heer/guidance/ehe-and-eals/]

[k] Oregon Department of Environmental Quality (DEQ) Risk Base Levels, 2026 [https://www.oregon.gov/deq/hazards-and-cleanup/env-cleanup/pages/risk-based-decision-making.aspx]

[l] Canadian Council of Ministers of the Environment for Residential and Parkland [https://rais.ornl.gov/documents/Canadian_soil_quality_environment_human_health.pdf]

[m] Use the California Hazardous Waste value (TTLC) cleanup goal if less than the environmental screening levels. The goal is 1 ppm less than the TTLC limit. Use these values for the initial confirmation soil sampling.
Additional rescrapes should include a site-specific background study to ensure the metal is not a background issue and clean soil is not being removed. A second rescrape may be performed if results are outside the RAAM Goals and/or background levels.