Metals Concentrations Typically Found in Unpolluted Soil and Soil Clean Up Standards

Metal (Symbol)	*Typical Concentrations in Natural Soils* (mg/kg, or ppm)*	*Metal Present in Fill in Newhall at Elevated Levels?*	*State Cleanup Standard Residential Direct Exposure Criteria (RDEC) (mg/kg, or ppm)*
Antimony (Sb)	<1 - 8.8	**Yes**	27
Arsenic (As)	<0.1 - 73	**Yes**	10
Barium (Ba)	10 - 1,500	**Yes**	4,700
Beryllium (Be)	<1 - 7	**Yes**	2
Cadmium (Cd)	<0.010 - 2	**Yes**	34
Chromium (Cr)	1 - 1,000	**Yes**	100/3,900 #
Cobalt (Co)	<0.3 - 70	No	70
Copper (Cu)	<0.6 - 495	**Yes**	2,500
Iron (Fe)	100 - >100,000	No	Not established
Lead (Pb)	<1.0 - 135	**Yes**	400
Magnesium (Mg)	50 - 50,000	No	Not established
Manganese (Mn)	<2 - 7000	No	1,400
Mercury (Hg)	0.01 - 3.40	**Yes**	20
Molybdenum (Mo)	0.2 - 5 **	No	Not established
Nickel (Ni)	0.7 - 269	**Yes**	1,400
Potassium (K)	50 - 37,000	No	Not established
Selenium (Se)	<0.1 - 3.9	**Yes**	340
Silver (Ag)	0.01 - 8	**Yes**	340
Strontium (Sr)	50 - 1,000 **	No	Not established
Thallium (Tl)	0.1 - 0.8	**Yes**	5.4
Tin (Sn)	2 - 200 **	No	2,000
Titanium (Ti)	1,000 - 10,000 **	No	Not established
Zinc (Zn)	<3.0 - 264	**Yes**	20,000
Zirconium (Zr)	60 - 2,000 **	No	Not established

This table can be used to compare the sample results provided to residents by Olin Corporation in order to determine if the clean up standard is exceeded. If so, remediation will be necessary.

Metals that have no standards established by DEP are either commonly found in natural soils or not often encountered at contaminated sites and, therefore, not routinely tested.

Notes:
* - Most data is specific to soils in the Northeastern US (source 1), except where noted.
** - Data is from source 2.
# - Criteria are 100 mg/kg for hexavalent chromium and 3,900 mg/kg for trivalent chromium.
mg/kg - milligrams per kilogram
ppm - parts per million

Sources:
1. Frink, Charles R., 1996. "A Perspective of Metals in Soils", *Journal of Soil Contamination*, 5(4):329-359. Table A8: Most Likely Concentrations of EPA Target Analytes in Uncontaminated Soils of the Northeast (mg/kg [ppm] dry weight.
2. Lindsay, W. 1979. Chemical Equilibrium in Soils. New York: John Wiley and Sons. (in: US EPA, 1987. A Compendium of Superfund Field Operations Methods. Exhibit 16-2. "The Content of Various Elements in Soils."

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