SUMMARY OF OIL HAZARDOUS MATERIALS WITH DERIVED PLANT UPTAKE FACTORS

Chemical	**Plant Uptake Factor (unitless)**
Arsenic	0.05
Cadmium	1.9
Chlordane	11.104
Chrome III	0.095
Chrome VI	0.095
Lead	0.15
Nickel	0.38
PCBs	0.839
Zinc	1.52

ARSENIC PLANT UPTAKE DERIVATION

Form	Soil conc. (mg/Kg)	soil type	pH	O.C.	Exposure	Comm name	Species	Plant tissue	Uptake factor	Citation	Field or l	Analyti method	Notes
mix of mine tailin	187	mine spoils	6.4	11 g/Kg	growing seas	bean	*Phaseolus vulgaris*	0.304	0.002	Cobb '00	greenhou	AAS	25% treatment of mine tailings and native soil
mix of mine tailin	408	mine spoils	6.4	11 g/Kg	growing seas	bean	*Phaseolus vulgaris*	0.7	0.002	Cobb '00	greenhou	AAS	100 % treatment of mine tailings
mix of mine tailin	196	mine spoils	6.4	11 g/Kg	growing seas	bean	*Phaseolus vulgaris*	0.533	0.003	Cobb '00	greenhou	AAS	50% treatment of mine tailings and native soil
mix of mine tailin	303	mine spoils	6.4	11 g/Kg	growing seas	bean	*Phaseolus vulgaris*	1.72	0.006	Cobb '00	greenhou	AAS	75% treatment of mine tailings and native soil
mix of mine tailin	23.3	native soils	6.8	12 g/Kg	growing seas	bean	*Phaseolus vulgaris*	0.184	0.008	Cobb '00	greenhou	AAS	Control but otherwise the treatment are a percetage of mine tailings
								Median	**0.003**				
								Mean	**0.004**				
mix of mine tailin	196	mine spoils	6.4	11 g/Kg	growing seas	lettuce	*Latuca sativa*	14.8	0.076	Cobb '00	greenhou	AAS	50% treatment of mine tailings and native soil
mix of mine tailin	408	mine spoils	6.4	11 g/Kg	growing seas	lettuce	*Latuca sativa*	34.9	0.086	Cobb '00	greenhou	AAS	100 % treatment of mine tailings
mix of mine tailin	187	mine spoils	6.4	11 g/Kg	growing seas	lettuce	*Latuca sativa*	21.5	0.115	Cobb '00	greenhou	AAS	25% treatment of mine tailings and native soil
mix of mine tailin	303	mine spoils	6.4	11 g/Kg	growing seas	lettuce	*Latuca sativa*	34.9	0.115	Cobb '00	greenhou	AAS	75% treatment of mine tailings and native soil
mix of mine tailin	23.3	native soils	6.8	12 g/Kg	growing seas	lettuce	*Latuca sativa*	5.47	0.235	Cobb '00	greenhou	AAS	Control but otherwise the treatment are a percetage of mine tailings
								Median	**0.115**				
								Mean	**0.125**				
mix of mine tailin	303	mine spoils	6.4	11 g/Kg	growing seas	radish	*Raphanaus sativa*	3.67	0.012	Cobb '00	greenhou	AAS	75% treatment of mine tailings and native soil
mix of mine tailin	187	mine spoils	6.4	11 g/Kg	growing seas	radish	*Raphanaus sativa*	2.94	0.016	Cobb '00	greenhou	AAS	25% treatment of mine tailings and native soil
mix of mine tailin	196	mine spoils	6.4	11 g/Kg	growing seas	radish	*Raphanaus sativa*	3.91	0.020	Cobb '00	greenhou	AAS	50% treatment of mine tailings and native soil
mix of mine tailin	23.3	native soils	6.8	12 g/Kg	growing seas	radish	*Raphanaus sativa*	0.593	0.025	Cobb '00	greenhou	AAS	Control but otherwise the treatment are a percetage of mine tailings
mix of mine tailin	408	mine spoils	6.4	11 g/Kg	growing seas	radish	*Raphanaus sativa*	11.9	0.029	Cobb '00	greenhou	AAS	100 % treatment of mine tailings
								Median	**0.020**				
								Mean	**0.020**				
									0.050	**Mean of means**			

CADMIUM PLANT UPTAKE DERIVATION

Form	Soil conc. (mg/Kg)	soil type	pH	O.C.	Exposure	Common name	Species	Plant tissue	Uptake factor	Citation	Field or pot	Analytical method	Notes
mix of mine tailings	6.06	mine spoils	6.4	11 g/Kg	growing season	bean	*Phaseolus vulgaris*	0.01	0.001650165	Cobb '00	greenhouse	AAS	25% treatment of mine tailings and native soil
mix of mine tailings	10.7	mine spoils	6.4	11 g/Kg	growing season	bean	*Phaseolus vulgaris*	0.176	0.016448598	Cobb '00	greenhouse	AAS	50% treatment of mine tailings and native soil
mix of mine tailings	18.1	mine spoils	6.4	11 g/Kg	growing season	bean	*Phaseolus vulgaris*	1.06	0.058563536	Cobb '00	greenhouse	AAS	100% treatment of mine tailings
metal salts	6.66	Orangeburg loamy sand	5.1	18.5g/kg	growing season	bean	*Phaseolus vulgaris*	0.48	0.072072072	Sajwan '96	field	ICP-ES	high
mix of mine tailings	1.38	native soils	6.8	12 g/Kg	growing season	bean	*Phaseolus vulgaris*	0.145	0.105072464	Cobb '00	greenhouse	AAS	Control but otherwise the treatment are a percetage of mine tailings
metal salts	4.52	Orangeburg loamy sand	5.1	18.5g/kg	growing season	bean	*Phaseolus vulgaris*	0.5	0.110619469	Sajwan '96	field	ICP-ES	med
N-Viro	2.39	biosolids	8.1	Not given	Growing season	Bean	not provided	0.39	0.163179916	Logan '97	field	Flame AAS	1993 data
mix of mine tailings	14.6	mine spoils	6.4	11 g/Kg	growing season	bean	*Phaseolus vulgaris*	2.61	0.178767123	Cobb '00	greenhouse	AAS	75% treatment of mine tailings and native soil
test plot	1.1	146 Mg/ha	6.9	Not provided	4 yr application	beans	*Phaseolus vulgaris*	0.24	0.218181818	Dixon '95	Field	Flame AAS	Histogram
N-Viro	0.84	biosolids	8.1	Not given	Growing season	Bean	not provided	0.63	0.75	Logan '97	field	Flame AAS	1995 data
metal salts	0.62	Orangeburg loamy sand	5.1	18.5g/kg	growing season	bean	*Phaseolus vulgaris*	0.5	0.806451613	Sajwan '96	field	ICP-ES	control
control	0.1	silt loam	6.8	Not provided	4 yr application	beans	*Phaseolus vulgaris*	0.26	2.6	Dixon '95	Field	Flame AAS	Histogram
control plot	0.04	silt loam	6.8	Not given	Growing season	Bean	not provided	0.16	4	Logan '97	field	Flame AAS	1995 data
control plot	0.04	silt loam	7.1	Not given	Growing season	Bean	not provided	0.66	16.5	Logan '97	field	Flame AAS	1993 data
								Median	**0.17097352**				
								Mean	**1.82721477**				
agricultural farms	0.24	clay loam	6.5	13.1 g/Kg	growing season	broccoli	not provided	0.01	0.041666667	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
agricultural farms	0.36	loamy sand	4.3	29.8 g/Kg	growing season	bok choy	not provided	0.05	0.138888889	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
agricultural farms	0.34	clay loam	4.3	29.8 g/Kg	growing season	broccoli	not provided	0.12	0.352941176	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
								Median	**0.138888889**				
								Mean	**0.177832244**				
N-Viro	0.92	biosolids	8.4	Not given	Growing season	Cabbage	not provided	0.02	0.02173913	Logan '97	field	Flame AAS	1994 data
agricultural farms	2.25	light clay	5	18.8 g/Kg	growing season	cabbage	*Brassica oleracea*	0.06	0.026666667	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
agricultural farms	1.84	clay loam	5.7	30.7 g/Kg	growing season	cabbage	*Brassica oleracea*	0.05	0.027173913	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
agricultural farms	0.11	sand	6.5	13.1 g/Kg	growing season	cabbage	*Brassica oleracea*	0.01	0.090909091	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
N-Viro	0.84	biosolids	8.1	Not given	Growing season	Cabbage	not provided	0.08	0.095238095	Logan '97	field	Flame AAS	1995 data
agricultural farms	1.12	loamy sand	5.3	23.3 g/Kg	growing season	cabbage	*Brassica oleracea*	0.11	0.098214286	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
N-Viro	2.39	biosolids	8.1	Not given	Growing season	Cabbage	not provided	0.57	0.238493724	Logan '97	field	Flame AAS	1993 data
fly ash	0.4	unknown	?	not provided	growing season	cabbage	not provided	0.18	0.45	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
agricultural farms	1.12	clay loam	5.7	30.7 g/Kg	growing season	cabbage	*Brassica oleracea*	0.56	0.5	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
control plot	0.04	silt loam	6.8	Not given	Growing season	Cabbage	not provided	0.02	0.5	Logan '97	field	Flame AAS	1994 data
control plot	0.04	silt loam	6.8	Not given	Growing season	Cabbage	not provided	0.02	0.5	Logan '97	field	Flame AAS	1995 data
control plot	0.04	silt loam	7.1	Not given	Growing season	Cabbage	not provided	0.7	17.5	Logan '97	field	Flame AAS	1993 data
								Median	**0.168354005**				
								Mean	**1.670702909**				
N-Viro	2.39	biosolids	8.1	Not given	Growing season	Carrot	not provided	0.31	0.129707113	Logan '97	field	Flame AAS	1993 data
N-Viro	0.84	biosolids	8.1	Not given	Growing season	Carrot	not provided	0.18	0.214285714	Logan '97	field	Flame AAS	1995 data
N-Viro	0.92	biosolids	8.4	Not given	Growing season	Carrot	not provided	0.4	0.434782609	Logan '97	field	Flame AAS	1994 data
control plot	0.04	silt loam	6.8	Not given	Growing season	Carrot	not provided	0.14	3.5	Logan '97	field	Flame AAS	1994 data
control plot	0.04	silt loam	6.8	Not given	Growing season	Carrot	not provided	0.15	3.75	Logan '97	field	Flame AAS	1995 data
control plot	0.04	silt loam	7.1	Not given	Growing season	Carrot	not provided	0.32	8	Logan '97	field	Flame AAS	1993 data
								Median	**1.967391304**				
								Mean	**2.671462573**				
agricultural farms	2.15	sandy loam	4.7	16.2 g/Kg	growing season	corn	*Zea mays*	0.01	0.004651163	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
agricultural farms	1.95	clay loam	5.7	30.7 g/Kg	growing season	eggplant	not provided	0.04	0.020512821	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
test plot	1.1	146 Mg/ha	6.9	Not provided	4 yr application	Sweet corn	*Zea mays*	0.16	0.145454545	Dixon '95	Field	Flame AAS	Histogram
control	0.1	silt loam	6.8	Not provided	4 yr application	Sweet corn	*Zea mays*	0.18	1.8	Dixon '95	Field	Flame AAS	Histogram
								Median	**0.082983683**				
								Mean	**0.492654632**				
agricultural farms	0.14	clay loam	4.7	21.6 g/Kg	growing season	lettuce	*Latuca sativa*	0.05	0.357142857	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
agricultural farms	0.68	loamy sand	4.3	19.6 g/Kg	growing season	lettuce	*Latuca sativa*	0.34	0.5	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
agricultural farms	0.24	sandy loam	4.7	16.2 g/Kg	growing season	lettuce	not provided	0.15	0.625	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
N-Viro	0.92	biosolids	8.4	Not given	Growing season	Lettuce	not provided	0.6	0.652173913	Logan '97	field	Flame AAS	1994 data
N-Viro	2.39	biosolids	8.1	Not given	Growing season	Lettuce	not provided	1.58	0.661087866	Logan '97	field	Flame AAS	1993 data
test plot	0.9	146 Mg/ha	6.9	Not provided	4 yr application	kale	*Brassica frimbriata*	0.7	0.777777778	Dixon '95	Field	Flame AAS	Histogram
mix of mine tailings	10.7	mine spoils	6.4	11 g/Kg	growing season	lettuce	*Latuca sativa*	8.61	0.804672897	Cobb '00	greenhouse	AAS	50% treatment of mine tailings and native soil
N-Viro	0.84	biosolids	8.1	Not given	Growing season	Lettuce	not provided	0.68	0.80952381	Logan '97	field	Flame AAS	1995 data
mix of mine tailings	6.06	mine spoils	6.4	11 g/Kg	growing season	lettuce	*Latuca sativa*	5.37	0.886138614	Cobb '00	greenhouse	AAS	25% treatment of mine tailings and native soil
fly ash	0.4	unknown	?	not provided	growing season	lettuce	not provided	0.36	0.9	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
test plot	0.9	146 Mg/ha	6.9	Not provided	4 yr application	lettuce	*Latuca sativa*	0.89	0.988888889	Dixon '95	Field	Flame AAS	Histogram
mix of mine tailings	1.38	native soils	6.8	12 g/Kg	growing season	lettuce	*Latuca sativa*	1.61	1.166666667	Cobb '00	greenhouse	AAS	Control but otherwise the treatment are a percetage of mine tailings
mix of mine tailings	14.6	mine spoils	6.4	11 g/Kg	growing season	lettuce	*Latuca sativa*	18.2	1.246575342	Cobb '00	greenhouse	AAS	75% treatment of mine tailings and native soil
mix of mine tailings	18.1	mine spoils	6.4	11 g/Kg	growing season	lettuce	*Latuca sativa*	25.5	1.408839779	Cobb '00	greenhouse	AAS	100% treatment of mine tailings
control	0.1	silt loam	6.8	Not provided	4 yr application	lettuce	*Latuca sativa*	0.8	8	Dixon '95	Field	Flame AAS	Histogram
control	0.1	silt loam	6.8	Not provided	4 yr application	kale	*Brassica frimbriata*	0.89	8.9	Dixon '95	Field	Flame AAS	Histogram
control plot	0.04	silt loam	6.8	Not given	Growing season	Lettuce	not provided	0.57	14.25	Logan '97	field	Flame AAS	1995 data
control plot	0.04	silt loam	7.1	Not given	Growing season	Lettuce	not provided	0.92	23	Logan '97	field	Flame AAS	1993 data
control plot	0.04	silt loam	6.8	Not given	Growing season	Lettuce	not provided	1.03	25.75	Logan '97	field	Flame AAS	1994 data
								Median	**0.9**				
								Mean	**4.82549939**				
agricultural farms	0.56	loamy sand	4.3	19.6 g/Kg	growing season	parsley	not provided	0.24	0.428571429	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
fly ash	0.8	unknown	?	not provided	growing season	pea	not provided	0.9	1.125	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
								Median	**0.776785714**				
								Mean	**0.776785714**				

CADMIUM PLANT UPTAKE DERIVATION

Form	Soil conc. (mg/Kg)	soil type	pH	O.C.	Exposure	Common name	Species	Plant tissue	Uptake factor	Citation	Field or pot	Analytical method	Notes
agricultural farms	1.59	loamy sand	5.3	23.3 g/Kg	growing season	potato	*Solanum tuberosum*	0.02	0.012578616	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
N-Viro	2.39	biosolids	8.1	Not given	Growing season	Potato	not provided	0.19	0.079497908	Logan '97	field	Flame AAS	1993 data
N-Viro	0.92	biosolids	8.4	Not given	Growing season	Potato	not provided	0.13	0.141304348	Logan '97	field	Flame AAS	1994 data
N-Viro	0.84	biosolids	8.1	Not given	Growing season	Potato	not provided	0.17	0.202380952	Logan '97	field	Flame AAS	1995 data
control plot	0.04	silt loam	6.8	Not given	Growing season	Potato	not provided	0.02	0.5	Logan '97	field	Flame AAS	1995 data
control plot	0.04	silt loam	6.8	Not given	Growing season	Potato	not provided	0.22	5.5	Logan '97	field	Flame AAS	1994 data
control plot	0.04	silt loam	7.1	Not given	Growing season	Potato	not provided	1.3	32.5	Logan '97	field	Flame AAS	1993 data
								Median	**0.202380952**				
								Mean	**5.562251689**				
agricultural farms	6.3	clay loam	4.3	29.8 g/Kg	growing season	radish	*Raphanus sativas*	0.01	0.001587302	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
mix of mine tailings	1.38	native soils	6.8	12 g/Kg	growing season	radish	*Raphanaus sativas*	0.01	0.007246377	Cobb '00	greenhouse	AAS	Control but otherwise the treatment are a percetage of mine tailings
mix of mine tailings	18.1	mine spoils	6.4	11 g/Kg	growing season	radish	*Raphanaus sativas*	5.31	0.293370166	Cobb '00	greenhouse	AAS	100% treatment of mine tailings
mix of mine tailings	10.7	mine spoils	6.4	11 g/Kg	growing season	radish	*Raphanaus sativas*	3.38	0.31588785	Cobb '00	greenhouse	AAS	50% treatment of mine tailings and native soil
mix of mine tailings	14.6	mine spoils	6.4	11 g/Kg	growing season	radish	*Raphanaus sativas*	5.18	0.354794521	Cobb '00	greenhouse	AAS	75% treatment of mine tailings and native soil
mix of mine tailings	6.06	mine spoils	6.4	11 g/Kg	growing season	radish	*Raphanaus sativas*	2.31	0.381188119	Cobb '00	greenhouse	AAS	25% treatment of mine tailings and native soil
fly ash	1	unknown	?	not provided	growing season	radish	not provided	0.54	0.54	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
								Median	**0.31588785**				
								Mean	**0.270582048**				
agricultural farms	6.37	clay loam	4.6	21.7 g/Kg	growing season	silverbeet	*Beta vulgaris*	0.32	0.050235479	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
fly ash	0.8	unknown	?	not provided	growing season	turnip	not provided	0.09	0.1125	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
								Median	**0.081367739**				
								Mean	**0.081367739**				
old mining nearby	8.9	silt loam-verdigris	6.4	13g/kg	growing season	soybeans	*Glycine max*	10.5	1.179775281	Pierzynski '93	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calculate
old mining nearby	8.2	silt loam-verdigris	6.4	13g/kg	growing season	soybeans	*Glycine max*	10	1.219512195	Pierzynski '93	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calculate
old mining nearby	7.6	silt loam-verdigris	6.4	13g/kg	growing season	soybeans	*Glycine max*	12.4	1.631578947	Pierzynski '93	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calculate
old mining nearby	7.7	silt loam-verdigris	6.4	13g/kg	growing season	soybeans	*Glycine max*	12.8	1.662337662	Pierzynski '93	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calculate
old mining nearby	7.3	silt loam-verdigris	6.4	13g/kg	growing season	soybeans	*Glycine max*	13.3	1.821917808	Pierzynski '93	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calculate
old mining nearby	8.1	silt loam-verdigris	6.4	13g/kg	growing season	soybeans	*Glycine max*	15.5	1.913580247	Pierzynski '93	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calculate
old mining nearby	6.9	silt loam-verdigris	6.4	13g/kg	growing season	soybeans	*Glycine max*	14	2.028985507	Pierzynski '93	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calculate
old mining nearby	7.4	silt loam-verdigris	6.4	13g/kg	growing season	soybeans	*Glycine max*	19.5	2.635135135	Pierzynski '93	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calculate
								Median	**1.742127735**				
								Mean	**1.761602848**				
test plot	0.9	146 Mg/ha	6.9	Not provided	4 yr application	Spinach	*Bloomsdale long standing spinach*	0.71	0.788888889	Dixon "95	Field	Flame AAS	Histogram
fly ash	0.8	unknown	?	not provided	growing season	spinach	not provided	0.76	0.95	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
control	0.1	silt loam	6.8	Not provided	4 yr application	Spinach	*Bloomsdale long standing spinach*	0.59	5.9	Dixon "95	Field	Flame AAS	Histogram
								Median	**0.95**				
								Mean	**2.546296296**				
test plot	1.1	146 Mg/ha	6.9	Not provided	4 yr application	Squash	*Cucurbita pepo*	0.025	0.022727273	Dixon "95	Field	Flame AAS	Histogram
agricultural farms	0.19	loamy sand	5.3	23.3 g/Kg	growing season	pumpkin	not provided	0.03	0.157894737	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
control	0.1	silt loam	6.8	Not provided	4 yr application	Squash	*Cucurbita pepo*	0.24	2.4	Dixon "95	Field	Flame AAS	Histogram
								Median	**0.157894737**				
								Mean	**0.860207337**				
agricultural farms	3.15	loam	5.8	24.7 g/Kg	growing season	tomato	*Lycopersicon esculentum*	0.01	0.003174603	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
agricultural farms	0.49	loamy sand	4.3	39.2 g/Kg	growing season	tomato	*Lycopersicon esculentum*	0.01	0.020408163	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
agricultural farms	0.31	loamy sand	4.3	19.6 g/Kg	growing season	tomato	*Lycopersicon esculentum*	0.01	0.032258065	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
agricultural farms	0.22	sand	4.3	13.4 g/Kg	growing season	tomato	*Lycopersicon esculentum*	0.01	0.045454545	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
agricultural farms	0.35	loamy sand	4.3	31.7 g/Kg	growing season	tomato	*Lycopersicon esculentum*	0.02	0.057142857	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
mix of mine tailings	14.6	mine spoils	6.4	11 g/Kg	growing season	tomato	*Lycopersicon esculenttum*	1	0.068493151	Cobb '00	greenhouse	AAS	75% treatment of mine tailings and native soil
agricultural farms	0.14	loamy sand	4.3	19.6 g/Kg	growing season	tomato	*Lycopersicon esculentum*	0.01	0.071428571	Jinadasa '97	field	ICP-OES	Many commercial farms sampled to get idea of factors affecting CD uptake; low pH!!
mix of mine tailings	10.7	mine spoils	6.4	11 g/Kg	growing season	tomato	*Lycopersicon esculenttum*	0.857	0.080093458	Cobb '00	greenhouse	AAS	50% treatment of mine tailings and native soil
mix of mine tailings	6.06	mine spoils	6.4	11 g/Kg	growing season	tomato	*Lycopersicon esculenttum*	0.704	0.116171617	Cobb '00	greenhouse	AAS	25% treatment of mine tailings and native soil
N-Viro	2.39	biosolids	8.1	Not given	Growing season	Tomato	not provided	0.39	0.163179916	Logan '97	field	Flame AAS	1993 data
N-Viro	0.92	biosolids	8.4	Not given	Growing season	Tomato	not provided	0.19	0.206521739	Logan '97	field	Flame AAS	1994 data
mix of mine tailings	1.38	native soils	6.8	12 g/Kg	growing season	tomato	*Lycopersicon esculenttum*	0.523	0.378985507	Cobb '00	greenhouse	AAS	Control but otherwise the treatment are a percetage of mine tailings
N-Viro	0.84	biosolids	8.1	Not given	Growing season	Tomato	not provided	0.88	1.047619048	Logan '97	field	Flame AAS	1995 data
control plot	0.04	silt loam	6.8	Not given	Growing season	Tomato	not provided	0.36	9	Logan '97	field	Flame AAS	1994 data
control plot	0.04	silt loam	7.1	Not given	Growing season	Tomato	not provided	0.66	16.5	Logan '97	field	Flame AAS	1993 data
control plot	0.04	silt loam	6.8	Not given	Growing season	Tomato	not provided	0.92	23	Logan '97	field	Flame AAS	1995 data
								Median	**0.098132538**				
								Mean	**3.174433203**				
						1.9070638 Mean of Means							

CHLORDANE PLANT UPTAKE DERIVATION

Chemical	Soil conc. (mg/Kg)	soil type	pH	O.C.	Exposure	Common name	Species	Plant tissue	Uptake factor	Citation	Field or pot	Analytical method
Chlordane	0	Old application of the pesticide to site	n.p.	n.p.	growing season	**eggplant**	n.p.	0	0.00	Mattina	field	GC-ECD
Chlordane	0.001	Old application of the pesticide to site	n.p.	n.p.	growing season	**pepper**	n.p.	0	0.00	Mattina	field	GC-ECD
Chlordane	0.001	Old application of the pesticide to site	n.p.	n.p.	growing season	**tomato**	n.p.	0	0.00	Mattina	field	GC-ECD
Chlordane	0.008	Old application of the pesticide to site	n.p.	n.p.	growing season	**beet**	n.p.	0.018	2.25	Mattina	field	GC-ECD
Chlordane	0.003	Old application of the pesticide to site	n.p.	n.p.	growing season	**zucchini**	n.p.	0.054	18.00	Mattina	field	GC-ECD
Chlordane	0.008	Old application of the pesticide to site	n.p.	n.p.	growing season	**carrot**	n.p.	0.371	46.38	Mattina	field	GC-ECD
							Sum		66.63			
							Mean		**11.1042**			

n.p.= not provided

Units are in ug/g, conc is "0" for some of the vegs and soil (?), no info presented on the soil

Chromium III PUF Documentation under review

Chromium VI PUF Documentation under review

LEAD PLANT UPTAKE DERIVATION

Form	Soil conc. (mg/Kg)	soil type	pH	O.C.	Exposure	Common name	Species	Plant tissue	Uptake factor	Citation	Field or po	Analytical method	Notes
mix of mine taili	6300	mine spoils	6.4	11 g/Kg	growing seasoı	bean	*Phaseolus vu*	3.14	0.00049841	Cobb '00	greenhouse	AAS	50% treatment of mine tailings and native soil
N-Viro	182.6	biosolids	8.1	Not given	Growing seaso	Bean	not provided	0.26	0.00142388	Logan '97	field	Flame AAS	1993 data
N-Viro	43.9	biosolids	8.1	Not given	Growing seaso	Bean	not provided	0.26	0.00592255	Logan '97	field	Flame AAS	1995 data
control	27.8	silt loam	7.1	Not given	Growing seaso	Bean	not provided	0.26	0.00935252	Logan '97	field	Flame AAS	1993 data
control	12.4	silt loam	6.8	Not given	Growing seaso	Bean	not provided	0.81	0.06532258	Logan '97	field	Flame AAS	1995 data
test plot	31	silt loam	6.8	Not provided	4 yr application	Green beans	*Phaseolus vu*	2.5	0.08064516	Dixon "95	Field	Flame AAS	Histogram
test plot	56	73 Mg/ha bic	7.3	Not provided	4 yr application	Green beans	*Phaseolus vu*	5	0.08928571	Dixon "95	Field	Flame AAS	Histogram
mix of mine taili	60.9	native soils	6.8	12 g/Kg	growing seasoı	bean	*Phaseolus vu*	5.53	0.0908046	Cobb '00	greenhouse	AAS	control but otherwise the treatment are a percetage of mine tailings
test plot	63	146 Mg/ha	7	Not provided	4 yr application	Green beans	*Phaseolus vu*	9.8	0.15555556	Dixon "95	Field	Flame AAS	Histogram
								Median	**0.06532258**				
								Mean	**0.05542344**				
N-Viro	182.6	biosolids	8.1	Not given	Growing seaso	Cabbage	not provided	0.5	0.00273823	Logan '97	field	Flame AAS	1993 data
N-Viro	72.5	biosolids	8.4	Not given	Growing seaso	Cabbage	not provided	0.26	0.00358621	Logan '97	field	Flame AAS	1994 data
N-Viro	43.9	biosolids	8.1	Not given	Growing seaso	Cabbage	not provided	0.26	0.00592255	Logan '97	field	Flame AAS	1995 data
control	27.8	silt loam	7.1	Not given	Growing seaso	Cabbage	not provided	0.45	0.01618705	Logan '97	field	Flame AAS	1993 data
control	12.4	silt loam	6.8	Not given	Growing seaso	Cabbage	not provided	0.26	0.02096774	Logan '97	field	Flame AAS	1995 data
control	10.2	silt loam	6.8	Not given	Growing seaso	Cabbage	not provided	0.26	0.0254902	Logan '97	field	Flame AAS	1994 data
fly ash	0.6	unknown	?	not provided	growing seasoı	cabbage	not provided	0.36	0.6	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
								Median	**0.01618705**				
								Mean	**0.09641314**				
N-Viro	182.6	biosolids	8.1	Not given	Growing seaso	Carrot	not provided	0.64	0.00350493	Logan '97	field	Flame AAS	1993 data
N-Viro	72.5	biosolids	8.4	Not given	Growing seaso	Carrot	not provided	0.26	0.00358621	Logan '97	field	Flame AAS	1994 data
N-Viro	43.9	biosolids	8.1	Not given	Growing seaso	Carrot	not provided	0.26	0.00592255	Logan '97	field	Flame AAS	1995 data
control	12.4	silt loam	6.8	Not given	Growing seaso	Carrot	not provided	0.26	0.02096774	Logan '97	field	Flame AAS	1995 data
control	10.2	silt loam	6.8	Not given	Growing seaso	Carrot	not provided	0.26	0.0254902	Logan '97	field	Flame AAS	1994 data
control	27.8	silt loam	7.1	Not given	Growing seaso	Carrot	not provided	0.77	0.02769784	Logan '97	field	Flame AAS	1993 data
fly ash	0.6	unknown	?	not provided	growing seasoı	carrot	not provided	0.18	0.3	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
								Median	**0.02096774**				
								Mean	**0.05530992**				
N-Viro	72.5	biosolids	8.4	Not given	Growing seaso	Lettuce	not provided	0.26	0.00358621	Logan '97	field	Flame AAS	1994 data
N-Viro	43.9	biosolids	8.1	Not given	Growing seaso	Lettuce	not provided	0.26	0.00592255	Logan '97	field	Flame AAS	1995 data
N-Viro	182.6	biosolids	8.1	Not given	Growing seaso	Lettuce	not provided	1.27	0.00695509	Logan '97	field	Flame AAS	1993 data
control	27.8	silt loam	7.1	Not given	Growing seaso	Lettuce	not provided	0.33	0.0118705	Logan '97	field	Flame AAS	1993 data
control	12.4	silt loam	6.8	Not given	Growing seaso	Lettuce	not provided	0.26	0.02096774	Logan '97	field	Flame AAS	1995 data
control	10.2	silt loam	6.8	Not given	Growing seaso	Lettuce	not provided	0.34	0.03333333	Logan '97	field	Flame AAS	1994 data
mix of mine taili	6300	mine spoils	6.4	11 g/Kg	growing seasoı	lettuce	*Latuca sativa*	248	0.03936508	Cobb '00	greenhouse	AAS	50% treatment of mine tailings and native soil
mix of mine taili	7950	mine spoils	6.4	11 g/Kg	growing seasoı	lettuce	*Latuca sativa*	421	0.05295597	Cobb '00	greenhouse	AAS	75% treatment of mine tailings and native soil
mix of mine taili	3600	mine spoils	6.4	11 g/Kg	growing seasoı	lettuce	*Latuca sativa*	227	0.06305556	Cobb '00	greenhouse	AAS	25% treatment of mine tailings and native soil
test plot	36	73 Mg/ha bic	7.3	Not provided	4 yr application	Kale	*Brassica frimt*	2.8	0.07777778	Dixon "95	Field	Flame AAS	Histogram
mix of mine taili	10500	mine spoils	6.4	11 g/Kg	growing seasoı	lettuce	*Latuca sativa*	919	0.08752381	Cobb '00	greenhouse	AAS	100% treatment of mine tailings and native soil
test plot	38	146 Mg/ha	7	Not provided	4 yr application	Kale	*Brassica frimt*	4	0.10526316	Dixon "95	Field	Flame AAS	Histogram
test plot	21	silt loam	6.8	Not provided	4 yr application	Kale	*Brassica frimt*	3.5	0.16666667	Dixon "95	Field	Flame AAS	Histogram
test plot	21	silt loam	6.8	Not provided	4 yr application	Lettuce	*Latuca sativa*	3.8	0.18095238	Dixon "95	Field	Flame AAS	Histogram
test plot	38	146 Mg/ha	7	Not provided	4 yr application	Lettuce	*Latuca sativa*	9.8	0.25789474	Dixon "95	Field	Flame AAS	Histogram
test plot	36	73 Mg/ha bic	7.3	Not provided	4 yr application	Lettuce	*Latuca sativa*	13	0.36111111	Dixon "95	Field	Flame AAS	Histogram
mix of mine taili	60.9	native soils	6.8	12 g/Kg	growing seasoı	lettuce	*Latuca sativa*	29.8	0.48932677	Cobb '00	greenhouse	AAS	control but otherwise the treatment are a percetage of mine tailings
fly ash	0.8	unknown	?	not provided	growing seasoı	lettuce	not provided	0.54	0.675	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
								Median	**0.25789474**				
								Mean	**0.31945926**				
fly ash	6	unknown	?	not provided	growing seasoı	pea	not provided	0.18	**0.03**	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
N-Viro	182.6	biosolids	8.1	Not given	Growing seaso	Potato	not provided	0.26	0.00142388	Logan '97	field	Flame AAS	1993 data
N-Viro	72.5	biosolids	8.4	Not given	Growing seaso	Potato	not provided	0.26	0.00358621	Logan '97	field	Flame AAS	1994 data

LEAD PLANT UPTAKE DERIVATION

Form	Soil conc. (mg/Kg)	soil type	pH	O.C.	Exposure	Common name	Species	Plant tissue	Uptake factor	Citation	Field or po	Analytical method	Notes
control	27.8	silt loam	7.1	Not given	Growing seaso	Potato	not provided	0.26	0.00935252	Logan '97	field	Flame AAS	1993 data
control	10.2	silt loam	6.8	Not given	Growing seaso	Potato	not provided	0.26	0.0254902	Logan '97	field	Flame AAS	1994 data
control	12.4	silt loam	6.8	Not given	Growing seaso	Potato	not provided	0.39	0.03145161	Logan '97	field	Flame AAS	1995 data
N-Viro	43.9	biosolids	8.1	Not given	Growing seaso	Potato	not provided	5.44	0.123918	Logan '97	field	Flame AAS	1995 data
								Median	**0.01742136**				
								Mean	**0.03253707**				
mix of mine taili	7950	mine spoils	6.4	11 g/Kg	growing seasoı	radish	*Raphanaus sa*	77.1	0.00969811	Cobb '00	greenhouse	AAS	75% treatment of mine tailings and native soil
mix of mine taili	10500	mine spoils	6.4	11 g/Kg	growing seasoı	radish	*Raphanaus sa*	154	0.01466667	Cobb '00	greenhouse	AAS	100% treatment of mine tailings and native soil
mix of mine taili	6300	mine spoils	6.4	11 g/Kg	growing seasoı	radish	*Raphanaus sa*	131	0.02079365	Cobb '00	greenhouse	AAS	50% treatment of mine tailings and native soil
mix of mine taili	3600	mine spoils	6.4	11 g/Kg	growing seasoı	radish	*Raphanaus sa*	92.4	0.02566667	Cobb '00	greenhouse	AAS	25% treatment of mine tailings and native soil
fly ash	0.8	unknown	?	not provided	growing seasoı	radish	*not provided*	0.36	0.45	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
								Median	**0.02079365**				
								Mean	**0.10416502**				
old mining near	106	silt loam-ver	6.4	13g/kg	growing seasoı	soybeans	*Glycine max*	12.3	0.11603774	Pierzynski '9	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calc
old mining near	114	silt loam-ver	6.4	13g/kg	growing seasoı	soybeans	*Glycine max*	13.8	0.12105263	Pierzynski '9	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calc
old mining near	109	silt loam-ver	6.4	13g/kg	growing seasoı	soybeans	*Glycine max*	17	0.1559633	Pierzynski '9	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calc
old mining near	101	silt loam-ver	6.4	13g/kg	growing seasoı	soybeans	*Glycine max*	16.8	0.16633663	Pierzynski '9	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calc
old mining near	102	silt loam-ver	6.4	13g/kg	growing seasoı	soybeans	*Glycine max*	18.5	0.18137255	Pierzynski '9	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calc
old mining near	95	silt loam-ver	6.4	13g/kg	growing seasoı	soybeans	*Glycine max*	17.8	0.18736842	Pierzynski '9	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calc
old mining near	98	silt loam-ver	6.4	13g/kg	growing seasoı	soybeans	*Glycine max*	18.8	0.19183673	Pierzynski '9	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calc
old mining near	102	silt loam-ver	6.4	13g/kg	growing seasoı	soybeans	*Glycine max*	21.3	0.20882353	Pierzynski '9	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calc
								Median	**0.17385459**				
								Mean	**0.16609894**				
test plot	36	73 Mg/ha bic	7.3	Not provided	4 yr application	Spinach	*Bloomsdale lc*	7	0.19444444	Dixon "95	Field	Flame AAS	Histogram
test plot	38	146 Mg/ha	7	Not provided	4 yr application	Spinach	*Bloomsdale lc*	8.5	0.22368421	Dixon "95	Field	Flame AAS	Histogram
fly ash	0.8	unknown	?	not provided	growing seasoı	spinach	not provided	0.18	0.225	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
test plot	21	silt loam	6.8	Not provided	4 yr application	Spinach	*Bloomsdale lc*	4.8	0.22857143	Dixon "95	Field	Flame AAS	Histogram
								Median	**0.22434211**				
								Mean	**0.21792502**				
test plot	31	silt loam	6.8	Not provided	4 yr application	Squash	*Cucurbita pep*	0.6	0.01935484	Dixon "95	Field	Flame AAS	Histogram
test plot	63	146 Mg/ha	7	Not provided	4 yr application	Squash	*Cucurbita pep*	3	0.04761905	Dixon "95	Field	Flame AAS	Histogram
test plot	56	73 Mg/ha bic	7.3	Not provided	4 yr application	Squash	*Cucurbita pep*	6	0.10714286	Dixon "95	Field	Flame AAS	Histogram
								Median	**0.04761905**				
								Mean	**0.05803891**				
test plot	63	146 Mg/ha	7	Not provided	4 yr application	Sweet corn	*Zea mays*	2.2	0.03492063	Dixon "95	Field	Flame AAS	Histogram
test plot	56	73 Mg/ha bic	7.3	Not provided	4 yr application	Sweet corn	*Zea mays*	2.5	0.04464286	Dixon "95	Field	Flame AAS	Histogram
test plot	31	silt loam	6.8	Not provided	4 yr application	Sweet corn	*Zea mays*	12.5	0.40322581	Dixon "95	Field	Flame AAS	Histogram
								Median	**0.04464286**				
								Mean	**0.16092977**				
mix of mine taili	6300	mine spoils	6.4	11 g/Kg	growing seasoı	tomato	*Lycopersicon*	0.357	5.6667E-05	Cobb '00	greenhouse	AAS	50% treatment of mine tailings and native soil
N-Viro	182.6	biosolids	8.1	Not given	Growing seaso	Tomato	not provided	0.26	0.00142388	Logan '97	field	Flame AAS	1993 data
N-Viro	72.5	biosolids	8.4	Not given	Growing seaso	Tomato	not provided	0.26	0.00358621	Logan '97	field	Flame AAS	1994 data
mix of mine taili	60.9	native soils	6.8	12 g/Kg	growing seasoı	tomato	*Lycopersicon*	0.464	0.00761905	Cobb '00	greenhouse	AAS	control but otherwise the treatment are a percetage of mine tailings
control	27.8	silt loam	7.1	Not given	Growing seaso	Tomato	not provided	0.26	0.00935252	Logan '97	field	Flame AAS	1993 data
N-Viro	43.9	biosolids	8.1	Not given	Growing seaso	Tomato	not provided	1.1	0.02505695	Logan '97	field	Flame AAS	1995 data
control	10.2	silt loam	6.8	Not given	Growing seaso	Tomato	not provided	0.7	0.06862745	Logan '97	field	Flame AAS	1994 data
control	12.4	silt loam	6.8	Not given	Growing seaso	Tomato	not provided	0.91	0.0733871	Logan '97	field	Flame AAS	1995 data
								Median	**0.00848578**				
								Mean	**0.02363873**				
fly ash	0.6	unknown	?	not provided	growing seasoı	turnip	not provided	0.36	**0.6**	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.

LEAD PLANT UPTAKE DERIVATION

Form	Soil conc. (mg/Kg)	soil type	pH	O.C.	Exposure	Common name	Species	Plant tissue	Uptake factor	Citation	Field or po	Analytical method	Notes
									0.15	mean of means			

Nickel PUF Documentation under review

PCB PLANT UPTAKE FACTOR DERIVATION

Chemical	Form	Soil conc. (mg/Kg)	soil type	pH	O.C.	Exposure	Common name	Species	Plant tissue	Uptake factor	Citation	Field or pot	Analytical method	Notes
PCB 052	small plots	np	np	np	np	Growing seas.	carrots	np	np	1.5	Cullen '96	Field	GC-ECD	No soil and plant concs just UF
PCB 052	small plots	np	np	np	np	Growing seas.	lettuce	np	np	6	Cullen '96	Field	GC-ECD	No soil and plant concs just UF
PCB 052	small plots	np	np	np	np	Growing seas.	potatoes	np	np	0.29	Cullen '96	Field	GC-ECD	No soil and plant concs just UF
PCB 052	small plots	np	np	np	np	Growing seas.	tomatoes	np	np	0.64	Cullen '96	Field	GC-ECD	No soil and plant concs just UF
		np												
PCB 101	small plots	np	np	np	np	Growing seas.	carrots	np	np	0.35	Cullen '96	Field	GC-ECD	No soil and plant concs just UF
PCB 101	small plots	np	np	np	np	Growing seas.	lettuce	np	np	1.5	Cullen '96	Field	GC-ECD	No soil and plant concs just UF
PCB 101	small plots	np	np	np	np	Growing seas.	potatoes	np	np	0.01	Cullen '96	Field	GC-ECD	No soil and plant concs just UF
PCB 101	small plots	np	np	np	np	Growing seas.	tomatoes	np	np	0.23	Cullen '96	Field	GC-ECD	No soil and plant concs just UF
PCB 138	small plots	np	np	np	np	Growing seas.	carrots	np	np	0.38	Cullen '96	Field	GC-ECD	No soil and plant concs just UF
PCB 138	small plots	np	np	np	np	Growing seas.	lettuce	np	np	1.1	Cullen '96	Field	GC-ECD	No soil and plant concs just UF
PCB 138	small plots	np	np	np	np	Growing seas.	potatoes	np	np	0.17	Cullen '96	Field	GC-ECD	No soil and plant concs just UF
PCB 138	small plots	np	np	np	np	Growing seas.	tomatoes	np	np	0.15	Cullen '96	Field	GC-ECD	No soil and plant concs just UF
PCB 153	small plots	np	np	np	np	Growing seas.	carrots	np	np	0.28	Cullen '96	Field	GC-ECD	No soil and plant concs just UF
PCB 153	small plots	np	np	np	np	Growing seas.	lettuce	np	np	0.74	Cullen '96	Field	GC-ECD	No soil and plant concs just UF
PCB 153	small plots	np	np	np	np	Growing seas.	potatoes	np	np	0.08	Cullen '96	Field	GC-ECD	No soil and plant concs just UF
PCB 153	small plots	np	np	np	np	Growing seas.	tomatoes	np	np	0.01	Cullen '96	Field	GC-ECD	No soil and plant concs just UF

Median 0.32

np = not provided

Mean 0.83938

ZINC PLANT UPTAKE DERIVATION

Form	Soil conc. (mg/Kg)	soil type	pH	O.C.	Exposure	Common name	Species	Plant tissue	Uptake factor	Citation	Field or pot	Analytical method	Notes
N-Viro	242	biosolids	8.1	Not given	Growing season	Bean	not provided	34	0.14049587	Logan '97	field	Flame AAS	1993 data
mix of mine tailii	72.3	native soils	6.8	12 g/Kg	growing season	bean	*Phaseolus vulgaris*	14.1	0.19502075	Cobb '00	greenhouse	AAS	Control but otherwise the treatment are a percetage of mine tailings
N-Viro	183	biosolids	8.1	Not given	Growing season	Bean	not provided	68	0.3715847	Logan '97	field	Flame AAS	1995 data
control	92	silt loam	7.1	Not given	Growing season	Bean	not provided	43	0.4673913	Logan '97	field	Flame AAS	1993 data
test plot	90	146 Mg/ha	6.9	Not provided	4 yr application	Green beans	*Phaseolus vulgaris*	46	0.51111111	Dixon "95	Field	Flame AAS	Histogram
control	93	silt loam	6.8	Not given	Growing season	Bean	not provided	74	0.79569892	Logan '97	field	Flame AAS	1995 data
control	44	silt loam	6.8	Not provided	no sludge	Green beans	*Phaseolus vulgaris*	53	1.20454545	Dixon "95	Field	Flame AAS	Histogram
								Median	**0.4673913**				
								Mean	**0.52654973**				
N-Viro	227	biosolids	8.4	Not given	Growing season	Cabbage	not provided	26	0.11453744	Logan '97	field	Flame AAS	1994 data
N-Viro	183	biosolids	8.1	Not given	Growing season	Cabbage	not provided	24	0.13114754	Logan '97	field	Flame AAS	1995 data
N-Viro	242	biosolids	8.1	Not given	Growing season	Cabbage	not provided	32	0.1322314	Logan '97	field	Flame AAS	1993 data
control	93	silt loam	6.8	Not given	Growing season	Cabbage	not provided	19	0.20430108	Logan '97	field	Flame AAS	1995 data
control	92	silt loam	7.1	Not given	Growing season	Cabbage	not provided	28	0.30434783	Logan '97	field	Flame AAS	1993 data
control	81	silt loam	6.8	Not given	Growing season	Cabbage	not provided	25	0.30864198	Logan '97	field	Flame AAS	1994 data
fly ash	6.2	unknown	?	not provided	growing season	cabbage	not provided	11.52	1.85806452	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
								Median	**0.20430108**				
								Mean	**0.43618168**				
N-Viro	227	biosolids	8.4	Not given	Growing season	Carrot	not provided	17	0.07488987	Logan '97	field	Flame AAS	1994 data
N-Viro	183	biosolids	8.1	Not given	Growing season	Carrot	not provided	22	0.12021858	Logan '97	field	Flame AAS	1995 data
N-Viro	242	biosolids	8.1	Not given	Growing season	Carrot	not provided	32	0.1322314	Logan '97	field	Flame AAS	1993 data
control	93	silt loam	6.8	Not given	Growing season	Carrot	not provided	23	0.24731183	Logan '97	field	Flame AAS	1995 data
control	81	silt loam	6.8	Not given	Growing season	Carrot	not provided	21	0.25925926	Logan '97	field	Flame AAS	1994 data
control	92	silt loam	7.1	Not given	Growing season	Carrot	not provided	48	0.52173913	Logan '97	field	Flame AAS	1993 data
fly ash	0.4	unknown	?	not provided	growing season	carrot	not provided	13.32	33.3	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
								Median	**0.24731183**				
								Mean	**4.95080715**				
test plot	160	146 Mg/ha	6.9	Not provided	4 yr application	kale	*Brassica frimbriata*	49	0.30625	Dixon "95	Field	Flame AAS	Histogram
control	45	silt loam	6.8	Not provided	no sludge	kale	*Brassica frimbriata*	75	1.66666667	Dixon "95	Field	Flame AAS	Histogram
mix of mine tailii	3220	mine spoils	6.4	11 g/Kg	growing season	lettuce	*Latuca sativa*	14.8	0.00459627	Cobb '00	greenhouse	AAS	50% treatment of mine tailings and native soil
mix of mine tailii	5250	mine spoils	6.4	11 g/Kg	growing season	lettuce	*Latuca sativa*	34.6	0.00659048	Cobb '00	greenhouse	AAS	100% treatment of mine tailings
mix of mine tailii	4870	mine spoils	6.4	11 g/Kg	growing season	lettuce	*Latuca sativa*	34.9	0.00716632	Cobb '00	greenhouse	AAS	75% treatment of mine tailings and native soil
mix of mine tailii	1740	mine spoils	6.4	11 g/Kg	growing season	lettuce	*Latuca sativa*	21.5	0.01235632	Cobb '00	greenhouse	AAS	25% treatment of mine tailings and native soil
mix of mine tailii	72.3	native soils	6.8	12 g/Kg	growing season	lettuce	*Latuca sativa*	5.47	0.07565698	Cobb '00	greenhouse	AAS	Control but otherwise the treatment are a percetage of mine tailings
control	45	silt loam	6.8	Not provided	no sludge	lettuce	*Latuca sativa*	7.5	0.16666667	Dixon "95	Field	Flame AAS	Histogram
N-Viro	227	biosolids	8.4	Not given	Growing season	Lettuce	not provided	44	0.1938326	Logan '97	field	Flame AAS	1994 data
test plot	160	146 Mg/ha	6.9	Not provided	4 yr application	lettuce	Latuca sativa	48	0.3	Dixon "95	Field	Flame AAS	Histogram
N-Viro	183	biosolids	8.1	Not given	Growing season	Lettuce	not provided	55	0.30054645	Logan '97	field	Flame AAS	1995 data
N-Viro	242	biosolids	8.1	Not given	Growing season	Lettuce	not provided	75	0.30991736	Logan '97	field	Flame AAS	1993 data
control	92	silt loam	7.1	Not given	Growing season	Lettuce	not provided	39	0.42391304	Logan '97	field	Flame AAS	1993 data
control	93	silt loam	6.8	Not given	Growing season	Lettuce	not provided	45	0.48387097	Logan '97	field	Flame AAS	1995 data
control	81	silt loam	6.8	Not given	Growing season	Lettuce	not provided	104	1.28395062	Logan '97	field	Flame AAS	1994 data
fly ash	2.8	unknown	?	not provided	growing season	lettuce	not provided	16.74	5.97857143	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
								Median	**0.30027322**				
								Mean	**0.72003451**				
fly ash	10.2	unknown	?	not provided	growing season	pea	not provided	18.62	1.8254902	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
N-Viro	242	biosolids	8.1	Not given	Growing season	Potato	not provided	19	0.0785124	Logan '97	field	Flame AAS	1993 data
N-Viro	227	biosolids	8.4	Not given	Growing season	Potato	not provided	22	0.0969163	Logan '97	field	Flame AAS	1994 data
N-Viro	183	biosolids	8.1	Not given	Growing season	Potato	not provided	21	0.1147541	Logan '97	field	Flame AAS	1995 data
control	92	silt loam	7.1	Not given	Growing season	Potato	not provided	18	0.19565217	Logan '97	field	Flame AAS	1993 data
control	93	silt loam	6.8	Not given	Growing season	Potato	not provided	20	0.21505376	Logan '97	field	Flame AAS	1995 data
control	81	silt loam	6.8	Not given	Growing season	Potato	not provided	23	0.28395062	Logan '97	field	Flame AAS	1994 data
								Median	**0.15520314**				
								Mean	**0.16413989**				

ZINC PLANT UPTAKE DERIVATION

Form	Soil conc. (mg/Kg)	soil type	pH	O.C.	Exposure	Common name	Species	Plant tissue	Uptake factor	Citation	Field or pot	Analytical method	Notes
mix of mine tailii	5250	mine spoils	6.4	11 g/Kg	growing season	radish	*Raphanaus sativas*	230	0.04380952	Cobb '00	greenhouse	AAS	100% treatment of mine tailings
mix of mine tailii	3220	mine spoils	6.4	11 g/Kg	growing season	radish	*Raphanaus sativas*	214	0.06645963	Cobb '00	greenhouse	AAS	50% treatment of mine tailings and native soil
mix of mine tailii	1740	mine spoils	6.4	11 g/Kg	growing season	radish	*Raphanaus sativas*	152	0.08735632	Cobb '00	greenhouse	AAS	25% treatment of mine tailings and native soil
mix of mine tailii	4870	mine spoils	6.4	11 g/Kg	growing season	radish	*Raphanaus sativas*	666	0.13675565	Cobb '00	greenhouse	AAS	75% treatment of mine tailings and native soil
mix of mine tailii	72.3	native soils	6.8	12 g/Kg	growing season	radish	*Raphanaus sativas*	23.6	0.3264177	Cobb '00	greenhouse	AAS	Control but otherwise the treatment are a percetage of mine tailings
fly ash	12.4	unknown	?	not provided	growing season	turnip	not provided	16.02	1.29193548	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
fly ash	5.8	unknown	?	not provided	growing season	radish	not provided	35.82	6.17586207	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
								Median	**0.13675565**				
								Mean	**1.16122805**				
													different treatments such as limestone, limestone suspension, cattle manure, etc for
old mining neart	1056	silt loam-ver	6.4	13g/kg	growing season	soybeans	*Glycine max*	338	0.32007576	Pierzynski '93	greenhouse	AAS	each uptake factor.
old mining neart	1129	silt loam-ver	6.4	13g/kg	growing season	soybeans	*Glycine max*	584	0.51727192	Pierzynski '93	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calculate
old mining neart	1003	silt loam-ver	6.4	13g/kg	growing season	soybeans	*Glycine max*	649	0.64705882	Pierzynski '93	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calculate
old mining neart	978	silt loam-ver	6.4	13g/kg	growing season	soybeans	*Glycine max*	755	0.77198364	Pierzynski '93	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calculate
old mining neart	988	silt loam-ver	6.4	13g/kg	growing season	soybeans	*Glycine max*	779	0.78846154	Pierzynski '93	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calculate
old mining neart	1020	silt loam-ver	6.4	13g/kg	growing season	soybeans	*Glycine max*	872	0.85490196	Pierzynski '93	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calculate
old mining neart	933	silt loam-ver	6.4	13g/kg	growing season	soybeans	*Glycine max*	923	0.98928189	Pierzynski '93	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calculate
old mining neart	1015	silt loam-ver	6.4	13g/kg	growing season	soybeans	*Glycine max*	1153	1.13596059	Pierzynski '93	greenhouse	AAS	Article gives uptake in terms of mg/pot but this is different than what I calculate
								Median	**0.78022259**				
								Mean	**0.75312452**				
test plot	160	146 Mg/ha	6.9	Not provided	4 yr application	Spinach	*Bloomsdale long standii*	75	0.46875	Dixon "95	Field	Flame AAS	Histogram
control	45	silt loam	6.8	Not provided	no sludge	Spinach	*Bloomsdale long standii*	125	2.77777778	Dixon "95	Field	Flame AAS	Histogram
fly ash	5.8	unknown	?	not provided	growing season	spinach	not provided	31.44	5.42068966	Barman '99	field	AAS	No information on pH, O.C, veg species, but samples are collocated.
								Median	**2.77777778**				
								Mean	**2.88907248**				
test plot	90	146 Mg/ha	6.9	Not provided	4 yr application	Squash	*Cucurbita pepo*	58	0.64444444	Dixon "95	Field	Flame AAS	Histogram
control	44	silt loam	6.8	Not provided	no sludge	Squash	*Cucurbita pepo*	62	1.40909091	Dixon "95	Field	Flame AAS	Histogram
								Median	**1.02676768**				
								Mean	**1.02676768**				
test plot	90	146 Mg/ha	6.9	Not provided	4 yr application	Sweet corn	*Zea mays*	110	1.22222222	Dixon "95	Field	Flame AAS	Histogram
control	44	silt loam	6.8	Not provided	no sludge	Sweet corn	*Zea mays*	95	2.15909091	Dixon "95	Field	Flame AAS	Histogram
								Median	**1.69065657**				
								Mean	**1.69065657**				
mix of mine tailii	1740	mine spoils	6.4	11 g/Kg	growing season	tomato	*Lycopersicon esculenttu*	13.4	0.00770115	Cobb '00	greenhouse	AAS	25% treatment of mine tailings and native soil
mix of mine tailii	72.3	native soils	6.8	12 g/Kg	growing season	tomato	*Lycopersicon esculenttu*	4.8	0.06639004	Cobb '00	greenhouse	AAS	Control but otherwise the treatment are a percetage of mine tailings
N-Viro	242	biosolids	8.1	Not given	Growing season	Tomato	not provided	34	0.14049587	Logan '97	field	Flame AAS	1993 data
control	92	silt loam	7.1	Not given	Growing season	Tomato	not provided	43	0.4673913	Logan '97	field	Flame AAS	1993 data
N-Viro	183	biosolids	8.1	Not given	Growing season	Tomato	not provided	90	0.49180328	Logan '97	field	Flame AAS	1995 data
control	93	silt loam	6.8	Not given	Growing season	Tomato	not provided	57	0.61290323	Logan '97	field	Flame AAS	1995 data
N-Viro	227	biosolids	8.4	Not given	Growing season	Tomato	not provided	279	1.22907489	Logan '97	field	Flame AAS	1994 data
control	81	silt loam	6.8	Not given	Growing season	Tomato	not provided	1340	16.5432099	Logan '97	field	Flame AAS	1994 data
								Median	**0.47959729**				
								Mean	**2.4448712**				
					1.52	**Mean of means**							

Resident - Soil: Table RS-6
Homegrown Produce Ingestion Rate

Data on mean produce ingestion rates (wet weight, ww) in the Northeast was obtained from the 1994-1996 Continuing Survey of Food Intakes by Individuals (USDA). Data for both genders were used for children under 6, while data for males was used for individuals 6 and older. The mean ingestion rates presented in the survey represent the arithmetic average of all individuals surveyed, regardless of whether or not they had consumed the produce item (e.g., an individual that did not consume the produce item was assigned a rate of 0 g/day). To determine the mean ingestion rate for individuals who ate each produce item, the ingestion rate for all individuals (consumers and nonconsumers) was divided by the percentage of individuals who ate the item (Table RS-6A). These mean ingestion rates for the produce consumers were summed to determine the total produce ingestion rate for each age-group and converted to dry weight assuming the produce items were all 90% water.

To convert mean ingestion rates for the age-groups studied in the survey to age-groups used in risk calculations, each age-group ingestion rate from the survey (i.e., 1 - 2 year olds, 3 - 5 year olds, 6 - 11 year olds, 12 - 19 year olds, and 20 - 39 year olds) was weighted according to the number of years spent in the risk calculation age group (i.e., 1 - 8 year olds, 8 - 15 year olds, and 15 - 31 year olds) (Table RS-6B). It was assumed that 25% of produce ingested was home-grown (Table RS-6C).

Table RS-6A

Age-groups studied in survey	White Potatoes			Dark-green vegetables			Deep-yellow vegetables		
	Ingestion Rate for All g/d (ww)	% of individuals that consumed item.	Ingestion Rate for Consumers g/d (ww)	Ingestion Rate for All g/d (ww)	% of individuals that consumed item.	Ingestion Rate for Consumers g/d (ww)	Ingestion Rate for All g/d (ww)	% of individuals that consumed item.	Ingestion Rate for Consumers g/d (ww)
1-2	28	40.3	69.5	6	10.1	59.4	5	12.7	39.4
3-5	30	37.1	80.9	5	6.5	76.9	7	12.7	55.1
6-11	47	44.2	106.3	6	9.1	65.9	2	8.5	23.5
12-19	59	40.3	146.4	2	2.3	87.0	11	15.8	69.6
20-39	76	45.1	168.5	25	14.7	170.1	4	5.7	70.2

Age-groups studied in survey	Tomatoes			Lettuce			Green Beans		
	Ingestion Rate for All g/d (ww)	% of individuals that consumed item.	Ingestion Rate for Consumers g/d (ww)	Ingestion Rate for All g/d (ww)	% of individuals that consumed item.	Ingestion Rate for Consumers g/d (ww)	Ingestion Rate for All g/d (ww)	% of individuals that consumed item.	Ingestion Rate for Consumers g/d (ww)
1-2	10	27.9	35.8	1	6	16.7	7	12.1	57.9
3-5	10	37.1	27.0	4	14	28.6	3	5.7	52.6
6-11	20	42	47.6	8	14.9	53.7	1	2	50.0
12-19	29	45.2	64.2	19	28.7	66.2	2	2.4	83.3
20-39	48	50.9	94.3	18	29.6	60.8	4	3.7	108.1

Table RS-6A (continued)

Age-groups studied in survey	Corn, Green peas, Lima beans: Ingestion Rate for All g/d (ww)	Corn, Green peas, Lima beans: % of individuals that consumed item.	Corn, Green peas, Lima beans: Ingestion Rate for Consumers g/d (ww)	Melons, berries: Ingestion Rate for All g/d (ww)	Melons, berries: % of individuals that consumed item.	Melons, berries: Ingestion Rate for Consumers g/d (ww)	Totals Wet Weight WWI g/day	Totals Dry Weight DWI g/day
1-2	12	15	80.0	7	9	77.8	436.4	43.6
3-5	14	21.7	64.5	14	11.6	120.7	506.3	50.6
6-11	9	13.6	66.2	5	5.9	84.7	498.0	49.8
12-19	14	9.9	141.4	17	5	340.0	998.1	99.8
20-39	12	7.3	164.4	6	4.5	133.3	969.7	97.0

Table RS-6B

Age-groups studied in survey	Years spent in age-group for 1-8 year old	Years spent in age-group for 8-15 year old	Years spent in age-group for 15-31 year old
1-2	2		
3-5	3		
6-11	2	4	
12-19		3	4
20-39			12
	7	7	16

Table RS-6C

	Produce Intake, dry weight: Child 1-2 years g/day	Child 1-8 years g/day	Child 8-15 years g/day	Adult 15-31 g/day
All Produce:	43.6	48.4	71.2	97.7
Homegrown:	10.9	12.1	17.8	24.4

Homegrown Produce Ingestion Assumptions

Mean quantities of produce consumed per individual for Northeast Region in 1-day
Percentages of individuals consuming
Mean quantities of produce consumed for "consumers only"
1994-1996 Continuing Survey of Food Intakes by Individuals, USDA

AGE	EP_{1-8} years	EP_{8-18} years	EP_{18-31} years	White Potatoes IR_{ww} g/d	White Potatoes %C % consume	White Potatoes g/d consumer only	Dark-green vegetables IR_{ww} g/d	Dark-green vegetables %C % consume	Dark-green vegetables g/d consumer only	Deep-yellow vegetables IR_{ww} g/d	Deep-yellow vegetables %C % consume	Deep-yellow vegetables g/d consumer only
Males & Females												
1-2	2			28	40.3	69.5	6	10.1	59.4	5	12.7	39.4
3-5	3			30	37.1	80.9	5	6.5	76.9	7	12.7	55.1
Males												
6-11	2	4		47	44.2	106.3	6	9.1	65.9	2	8.5	23.5
12-19		6	1	59	40.3	146.4	2	2.3	87.0	11	15.8	69.6
20-39			12	76	45.1	168.5	25	14.7	170.1	4	5.7	70.2
ED:	7	10	13									

	Produce Intake, dry weight Child 1-8 years g/day	Child 8-18 years g/day	Adult 18-31 g/day
All Produce:	48.4	79.8	97.2
Homegrown Produce:	12.1	20.0	24.3

Percent of Produce Consumed Assumed to be Homegrown:
%HG = **25** %

Percent Moisture of Produce:
%M = **90** %

Homegrown Produce Assumptions

	Average Body Weigh BW kg	Produce Intake Rate PIR g/day	Eposure Frequency EF1 days/week	EF2 weeks/year	Exposure Period EP years	Averaging Period AP years	Conversion Constant C1 days/year	Conversion Constant C2 g/kg	
Noncancer Risk									Average Daily Produce Intake Rate 1/day
Receptor:									
Resident, Age 1-8									
Age 1-8	17.0	12.1	7	52	7	7	365	1000	
Receptor Total									7.10E-04
Cancer Risk									Lifetime Average Daily Produce Intake Rate 1/day
Receptor:									
Resident, Age 1-31									
Age 1-8	17.0	12.1	7	52	7				
Age 8-18	39.9	20.0	7	52	10				
Age 18-31	58.7	24.3	7	52	13				
Receptor Total					30	70	365	1000	2.19E-04

Nancy Bettinger, MassDEP ORS
(617) 556-1159
Nancy.Bettinger@state.ma.us

Tomatoes			Lettuce			Green Beans			Corn, Green peas, Lima beans			Melons, berries			Totals	Totals	
IR_{ww} g/d	%C % consume	g/d consumer only	IR_{ww} g/d	%C % consume	g/d consumer only	IR_{ww} g/d	%C % consume	g/d consumer only	IR_{ww} g/d	%C % consume	g/d consumer only	IR_{ww} g/d	%C % consume	g/d consumer only	Wet Weight WWI g/day	Dry Weight DWI g/day	AGE
																	Males & Females
10	27.9	35.8	1	6	16.7	7	12.1	57.9	12	15	80.0	7	9	77.8	436.4	43.6	1-2
10	37.1	27.0	4	14	28.6	3	5.7	52.6	14	21.7	64.5	14	11.6	120.7	506.3	50.6	3-5
																	Males
20	42	47.6	8	14.9	53.7	1	2	50.0	9	13.6	66.2	5	5.9	84.7	498.0	49.8	6-11
29	45.2	64.2	19	28.7	66.2	2	2.4	83.3	14	9.9	141.4	17	5	340.0	998.1	99.8	12-19
48	50.9	94.3	18	29.6	60.8	4	3.7	108.1	12	7.3	164.4	6	4.5	133.3	969.7	97.0	20-39

Nancy Bettinger, MassDEP ORS
(617) 556-1159
Nancy.Bettinger@state.ma.us

Homegrown Produce Ingestion Assumptions

This table presents exposure factors for evaluating residential consumption of homegrown produce containing chemical contaminants.
These factors are receptor-specific and apply regardless of contaminant of concern.
These values are then used in combination with chemical-specific factors to calculate risks from consuming homegrown produce.

Homegrown Produce Ingestion Assumptions

	Exposure Period EP years	Averaging Period AP years	Average Body Weight kg	Conversion Constant C1 kg/g
Chronic Noncancer Risk				
Receptor:				
Child, 1-8	7	7	16.8	1.0E-03
Cancer Risk				
Receptor:				
Child, 1-8	7		16.8	
Older Child, 8-15	7		39.7	
Adult, 15-30	16		54.2	
Receptor Total:	30	70		1.0E-03

Average Daily Intake of Produce from all sources, as consumed (wet weight)

	Child, 1-8 g/day	der Child, 8- g/day	Adult, 15-30 g/day
White Potato	84.89	123.51	161.60
Dark-green	68.78	74.94	144.10
Deep-yellow	41.59	43.28	70.00
Tomatoes	35.40	54.71	84.88
Lettuce	32.35	59.05	62.50
Green Beans	53.37	64.29	100.37
Corn, Green Peas, Lima E	69.41	98.42	157.21
Melons and Berries	98.16	194.14	197.92

Average Daily Intake of Homegrown Produce, dry weight

	Child, 1-8 g/day	der Child, 8- g/day	Adult, 15-30 g/day
White Potato	2.1	3.1	4.0
Dark-green	1.7	1.9	3.6
Deep-yellow	1.0	1.1	1.8
Tomatoes	0.9	1.4	2.1
Lettuce	0.8	1.5	1.6
Green Beans	1.3	1.6	2.5
Corn, Green Peas, Lima E	1.7	2.5	3.9
Melons and Berries	2.5	4.9	4.9
SUM all homegrown produ	12.1	17.8	24.5

Daily intake rates reflect mean values for the Northeast Region from 1994-1996 Continuing Survey of Food Intakes by Individuals, USDA