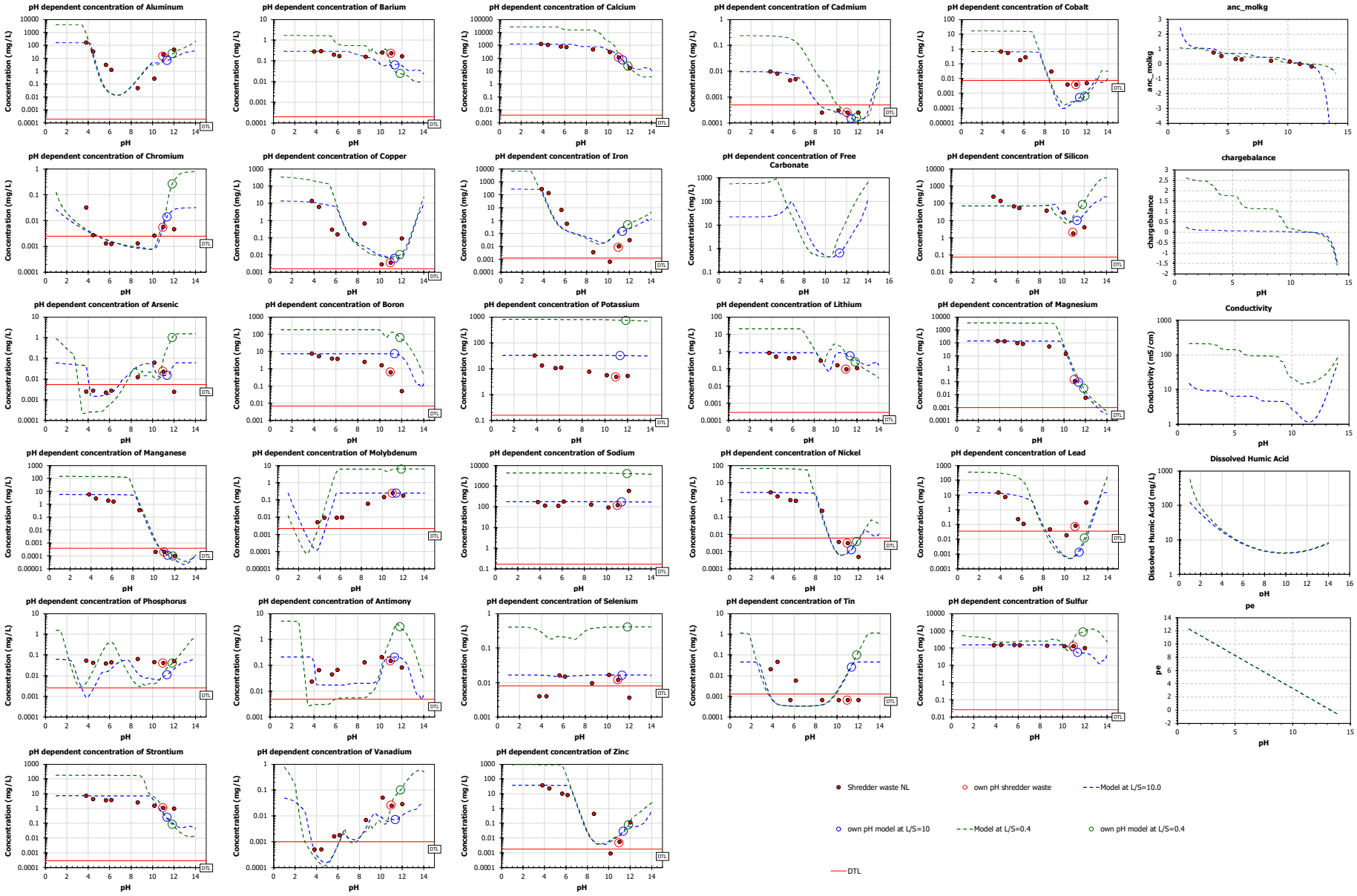
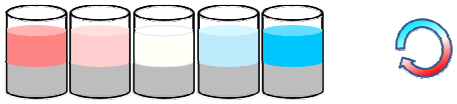
SHREDDER WASTE NL

COMPARISON pH DEPENDENCE WITH MODEL



Object pH Dependent Leaching Test Model
Name Shredder waste NL for Lite

pH Dependent Leaching Test Scenario



Lab Test

Extra L/S Simulation

Lab Test

Model Parameters

Entity	Unit	Default
L/S	L/kg	10.02
c0		-3.848
c1		-0.3875
c2		0.02179
c3		-0.0001456
c4		0
c5		0
Clay	mg/kg	1.000E+04
Hydrous Ferric Oxid	mg/kg	40.00
Solid Humic Acid	mg/kg	1500
Dissolved Humic Aci	mg/L	2.128
pe		1.000
pH		12.28
Extra L/S	L/kg	0.4000

Available Content

Entity	mg/kg	Entity	mg/kg	Entity	mg/kg
Ag	1.079E-08	Si	2396	P	0.6419
Al	1605	As	0.6206	Sb	2.092
Ba	2.948	B	75.19	Se	0.1652
Br	9.800	Hg	2.006E-08	Sn	0.4592
Ca	1.272E+04	K	326.4	S	1516
Cd	0.09651	Li	8.336	Sr	72.63
Cl	1700	Mg	1388	Th	2.320E-08
Co	6.784	Mn	57.03	U	2.380E-08
Cr	0.3147	Mo	2.497	V	0.5015
Cu	137.9	Na	1766	Zn	373.4
F	1.900E-09	Ni	27.26		
Fe	2747	NO3	6.200E-09		
CO32-	7000	Pb	143.6		

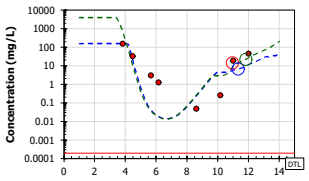
Solid Solutions

Name	End Member	Log(K)	Reaction
CSHi_ss	Cem07_SiO2[am]_s	24.21	Cem07_SiO2[am]_ss + 2 H2O -> 1 CSHi_ss + 2 H+ + 1 H2SiO4-2
	Cem07_Tob_I_ss	23.87	Cem07_Tob_I_ss -> 1 CSHi_ss + 2 Ca+2 + 0.8 H+ + 1.2 H2O + 2.4 H2SiO4-2
CSHii_ss	Cem07_Jenn_ss	-7.799	Cem07_Jenn_ss + 1.33333 H+ -> 1 CSHii_ss + 1.66667 Ca+2 + 1.76667 H2O + 1 H2SiO4-2
	Cem07_Tob_II_ss	10.36	Cem07_Tob_II_ss -> 1 CSHii_ss + 0.83333 Ca+2 + 0.33333 H+ + 0.16667 H2O + 1 H2SiO4-2
ettr_ss	AsO4_Ettringite_ss	-35.00	AsO4_Ettringite_ss + 10 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 H3AsO4 + 1 ettr_ss
	Ba_Ettringite_ss	4.008	Ba_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ba+2 + 3 SO4-2 + 1 ettr_ss
	BO3_Ettringite_ss	-74.59	BO3_Ettringite_ss + 10 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 H3BO3 + 1 ettr_ss
	CO3_Ettringite_ss	-25.67	CO3_Ettringite_ss + 6 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 1 H2CO3 + 2 SO4-2 + 1 ettr_ss
	CrO4_Ettrir	-8.592	CrO4_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 CrO4-2 + 1 ettr_ss
	Ettringite_s	-10.99	Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 SO4-2 + 1 ettr_ss
	MoO4_Ettr	-9.592	MoO4_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 MoO4-2 + 1 ettr_ss
	PO4_Ettrin	39.10	PO4_Ettringite_ss + 1 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 PO4-3 + 1 ettr_ss
	Sb[OH]6-_E	-33.80	Sb[OH]6-_Ettringite_ss + 7 H+ + 17 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 Sb[OH]6- + 1 ettr_ss
	SeO4-2_Ett	-8.592	SeO4-2_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 SeO4-2 + 1 ettr_ss
	Sr_Ettringit	4.008	Sr_Ettringite_ss + 4 H+ + 8 H2O -> 2 Al[OH]4- + 3 SO4-2 + 6 Sr+2 + 1 ettr_ss
	VO3_Ettrin	-53.79	VO3_Ettringite_ss + 13 H+ + 2 H2O -> 2 Al[OH]4- + 6 Ca+2 + 3 VO2+ + 1 ettr_ss

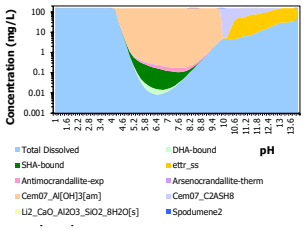
Minerals

Name	Log(K)	Reaction
AA_Fe[OH]3[am]	16.60	AA_Fe[OH]3[am] + 1 H2O -> 1 Fe[OH]4- + 1 H+
Antimocrandallite-e	63.00	Antimocrandallite-exp + 8 H2O -> 3 Al[OH]4- + 1 Ca+2 + 3 H+ + 2 Sb[OH]6-
Arsenocrandallite-th	54.37	Arsenocrandallite-therm + 6 H2O -> 3 Al[OH]4- + 1 Ca+2 + 1 H+ + 2 H3AsO4
Ba[SCr]O4[96%SO4]	9.790	Ba[SCr]O4[96%SO4] -> 1 Ba+2 + 0.04 CrO4-2 + 0.96 SO4-2
BaSrSO4[50%Ba]	8.221	BaSrSO4[50%Ba] -> 0.5 Ba+2 + 1 SO4-2 + 0.5 Sr+2
beta-TCP	28.93	beta-TCP -> 3 Ca+2 + 2 PO4-3
Ca[OH]2.Cd[OH]2_e	-34.00	Ca[OH]2.Cd[OH]2_exp + 4 H+ -> 1 Ca+2 + 1 Cd+2 + 4 H2O
Ca[OH]2.Ni[OH]2_e	-32.00	Ca[OH]2.Ni[OH]2_exp + 4 H+ -> 1 Ca+2 + 4 H2O + 1 Ni+2
Ca[OH]2.Zn[OH]2_e	-30.52	Ca[OH]2.Zn[OH]2_exp + 4 H+ -> 1 Ca+2 + 4 H2O + 1 Zn+2
Ca5[OH][AsO4]3[c]	-35.66	Ca5[OH][AsO4]3[c] + 10 H+ -> 5 Ca+2 + 1 H2O + 3 H3AsO4
CaCO3_Li2CO3	-12.06	CaCO3_Li2CO3 + 4 H+ -> 1 Ca+2 + 2 H2CO3 + 2 Li+
Cd2SiO4	6.059	Cd2SiO4 + 2 H+ -> 2 Cd+2 + 1 H2SiO4-2
Cem07_Al[OH]3[am	13.76	Cem07_Al[OH]3[am] + 1 H2O -> 1 Al[OH]4- + 1 H+
Cem07_Brucite	-16.83	Cem07_Brucite + 2 H+ -> 2 H2O + 1 Mg+2
Cem07_C2ASH8	17.40	Cem07_C2ASH8 -> 2 Al[OH]4- + 2 Ca+2 + 3 H2O + 1 H2SiO4-2
Cem07_C2FSH8	21.41	Cem07_C2FSH8 -> 2 Ca+2 + 2 Fe[OH]4- + 3 H2O + 1 H2SiO4-2
Cem07_C3FH6	-30.82	Cem07_C3FH6 + 4 H+ -> 3 Ca+2 + 2 Fe[OH]4- + 4 H2O
Cem07_Calcite	-8.196	Cem07_Calcite + 2 H+ -> 1 Ca+2 + 1 H2CO3
Cem07_Gypsum	4.583	Cem07_Gypsum -> 1 Ca+2 + 2 H2O + 1 SO4-2
Cem07_Portlandite	-22.79	Cem07_Portlandite + 2 H+ -> 1 Ca+2 + 2 H2O
Exp_Ca[OH]2.Co[OH]2	-33.22	Exp_Ca[OH]2.Co[OH]2 + 4 H+ -> 1 Ca+2 + 1 Co+2 + 4 H2O
Exp_Ca[OH]2.Cu[OH]2	-30.00	Exp_Ca[OH]2.Cu[OH]2 + 4 H+ -> 1 Ca+2 + 1 Cu+2 + 4 H2O
Exp_Co2SiO4	5.289	Exp_Co2SiO4 + 2 H+ -> 2 Co+2 + 1 H2SiO4-2
Exp_Fe2[MoO4]3[2]	86.35	Exp_Fe2[MoO4]3[2] + 8 H2O -> 2 Fe[OH]4- + 8 H+ + 3 MoO4-2
Exp_Sn[OH]2[s]	1.447	Exp_Sn[OH]2[s] + 2 H+ -> 2 H2O + 1 Sn+2
FeVO4:2H2O_am	23.48	FeVO4:2H2O_am + 2 H2O -> 1 Fe[OH]4- + 1 VO2+
Li2_CaO_Al2O3_SiO2_8H2O[s]	22.69	Li2_CaO_Al2O3_SiO2_8H2O[s] -> 2 Al[OH]4- + 1 Ca+2 + 3 H2O + 1 H2SiO4-2 + 2 Li+
Manganite	-25.27	Manganite + 3 H+ + 1 e- -> 2 H2O + 1 Mn+2
Ni[OH]2[s]	-10.80	Ni[OH]2[s] + 2 H+ -> 2 H2O + 1 Ni+2
Pb[OH]2[C]	-8.150	Pb[OH]2[C] + 2 H+ -> 2 H2O + 1 Pb+2
Spodumene2	58.00	Spodumene2 + 6 H2O -> 1 Al[OH]4- + 4 H+ + 2 H2SiO4-2 + 1 Li+
Strengite	48.00	Strengite + 2 H2O -> 1 Fe[OH]4- + 4 H+ + 1 PO4-3
Tenorite	-7.620	Tenorite + 2 H+ -> 1 Cu+2 + 1 H2O
Willemite	6.289	Willemite + 2 H+ -> 1 H2SiO4-2 + 2 Zn+2

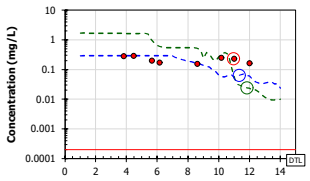
pH dependent concentration of Aluminum



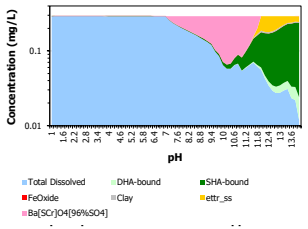
Al Profile at L/S=10 L/kg



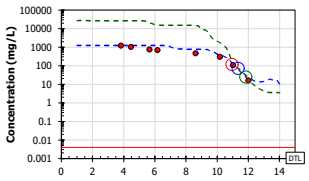
pH dependent concentration of Barium



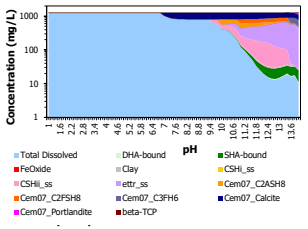
Ba Profile at L/S=10 L/kg



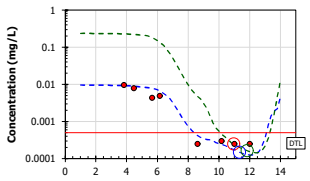
pH dependent concentration of Calcium



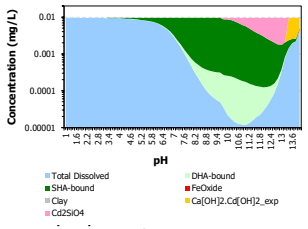
Ca Profile at L/S=10 L/kg



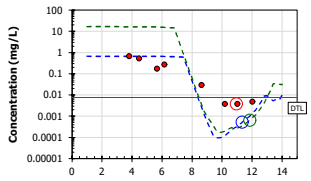
pH dependent concentration of Cadmium



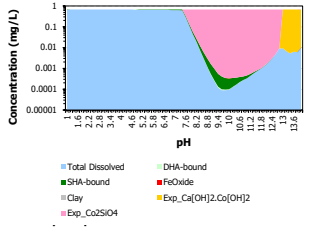
Cd Profile at L/S=10 L/kg

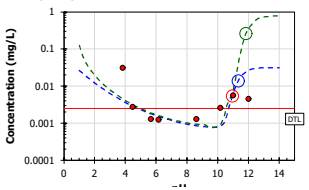


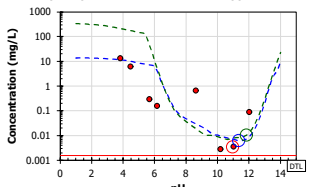
pH dependent concentration of Cobalt

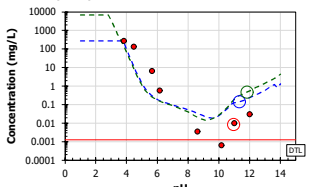


Co Profile at L/S=10 L/kg

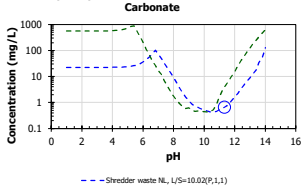


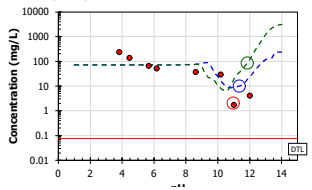




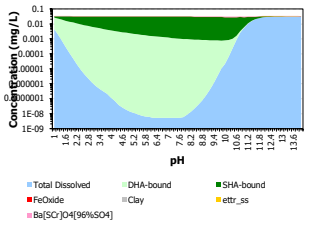


Carbonate

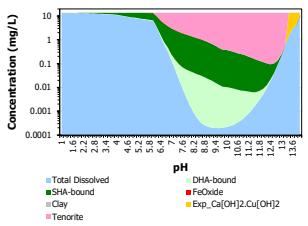




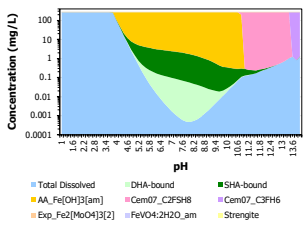
Cr Profile at L/S=10 L/kg



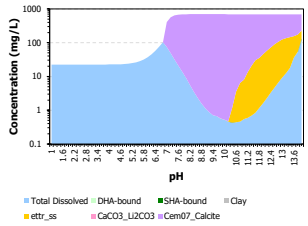
Cu Profile at L/S=10 L/kg



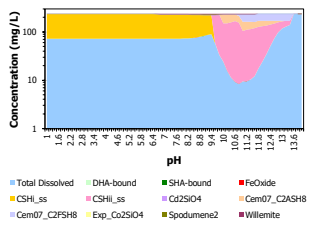
Fe Profile at L/S=10 L/kg

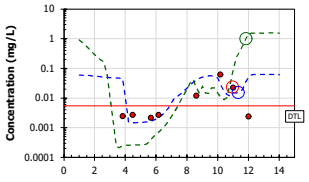


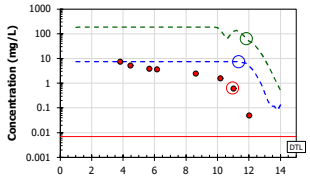
CO32- Profile at L/S=10 L/kg

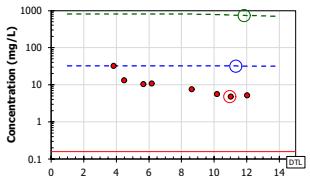


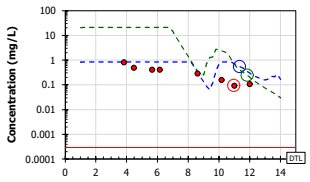
Si Profile at L/S=10 L/kg

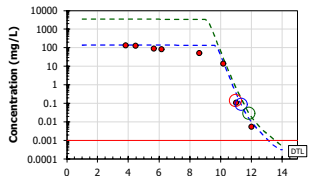




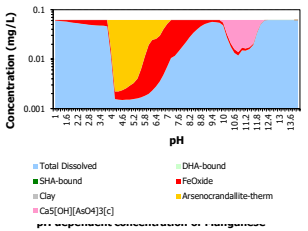




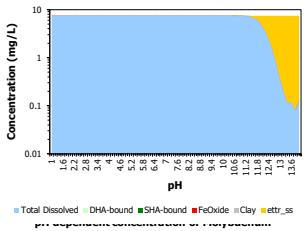




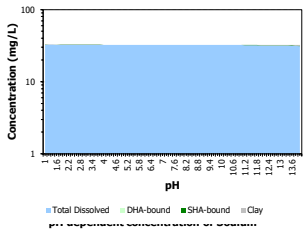
As Profile at L/S=10 L/kg



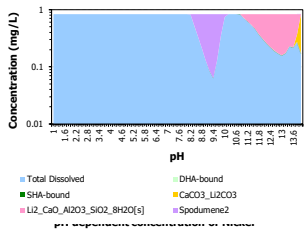
B Profile at L/S=10 L/kg



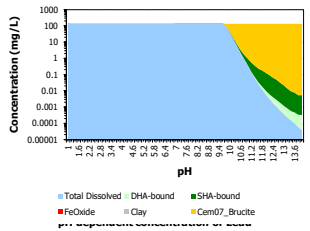
K Profile at L/S=10 L/kg

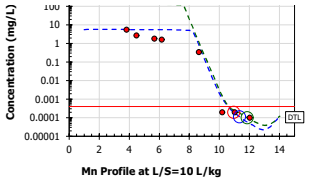


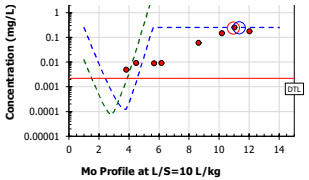
Li Profile at L/S=10 L/kg

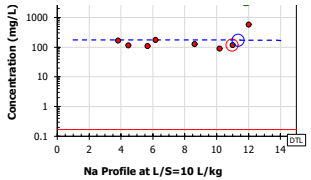


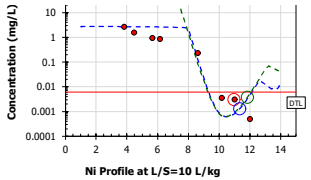
Mg Profile at L/S=10 L/kg

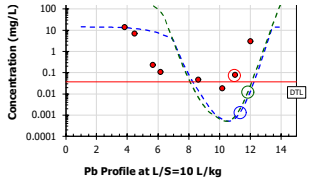


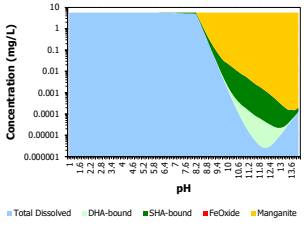

Concentration (mg/L)
DTL
Mn Profile at L/S=10 L/kg

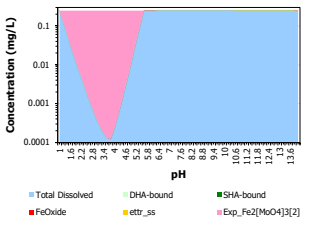

Concentration (mg/L)
DTL
Mo Profile at L/S=10 L/kg

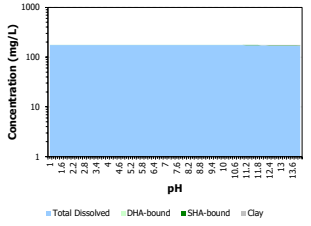

Concentration (mg/L)
DTL
Na Profile at L/S=10 L/kg

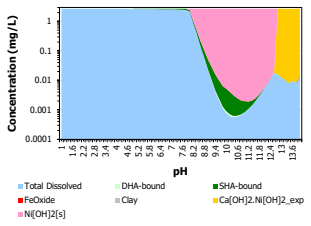

Concentration (mg/L)
DTL
Ni Profile at L/S=10 L/kg

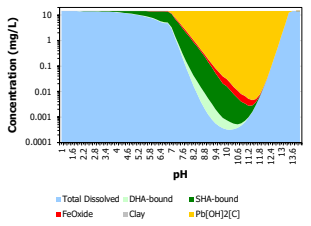

Concentration (mg/L)
DTL
Pb Profile at L/S=10 L/kg

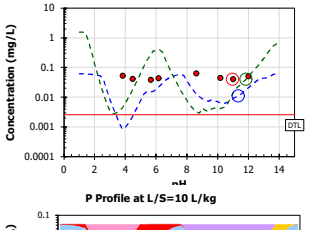

Concentration (mg/L)
pH
Total Dissolved
DHA-bound
SHA-bound
FeOxide
Manganite

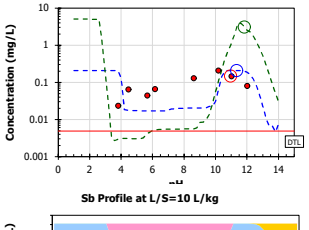

Concentration (mg/L)
pH
Total Dissolved
DHA-bound
SHA-bound
FeOxide
ettr_ss
Exp_Fe2[MoO4]3[2]

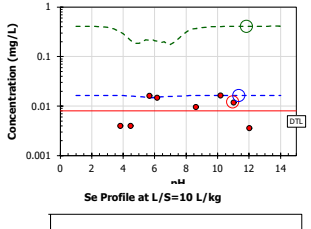

Concentration (mg/L)
pH
Total Dissolved
DHA-bound
SHA-bound
Clay

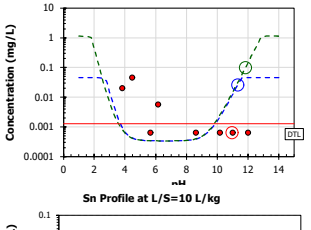

Concentration (mg/L)
pH
Total Dissolved
DHA-bound
SHA-bound
FeOxide
Clay
Ca[OH]2.Ni[OH]2_exp
Ni[OH]2[s]

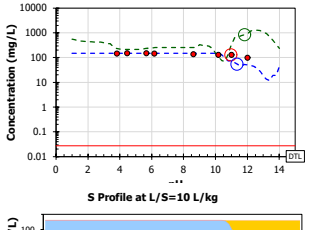

Concentration (mg/L)
pH
Total Dissolved
DHA-bound
SHA-bound
FeOxide
Clay
Pb[OH]2[C]

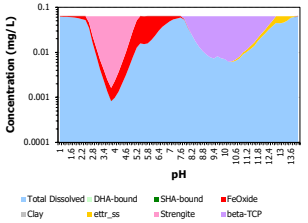

Concentration (mg/L)
DTL
P Profile at L/S=10 L/kg

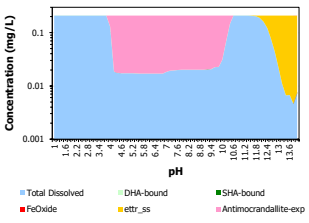

Concentration (mg/L)
DTL
Sb Profile at L/S=10 L/kg

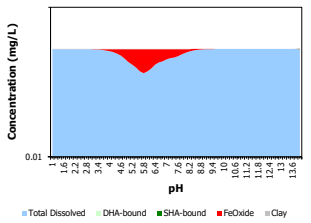

Concentration (mg/L)
DTL
Se Profile at L/S=10 L/kg

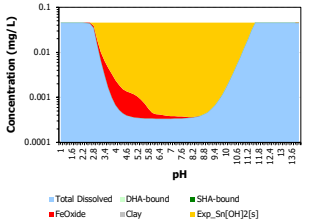

Concentration (mg/L)
DTL
Sn Profile at L/S=10 L/kg

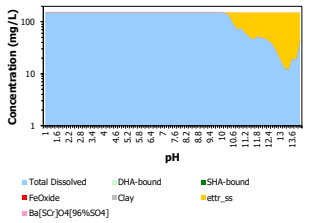

Concentration (mg/L)
DTL
S Profile at L/S=10 L/kg

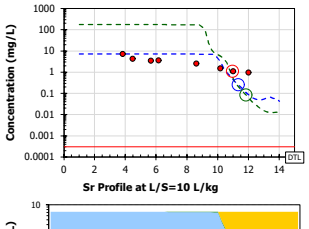

Concentration (mg/L)
pH
Total Dissolved
DHA-bound
SHA-bound
FeOxide
Clay
ettr_ss
Strengite
beta-TCP

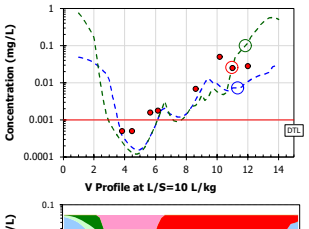

Concentration (mg/L)
pH
Total Dissolved
DHA-bound
SHA-bound
FeOxide
ettr_ss
Antimocrandallite-exp

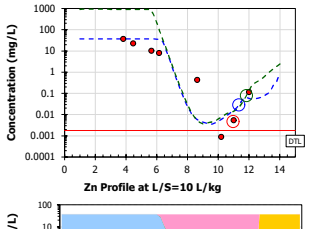

Concentration (mg/L)
pH
Total Dissolved
DHA-bound
SHA-bound
FeOxide
Clay

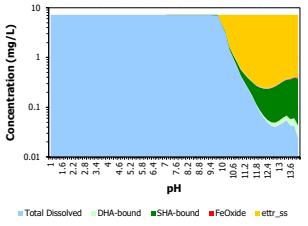

Concentration (mg/L)
pH
Total Dissolved
DHA-bound
SHA-bound
FeOxide
Clay
Exp_Sn[OH]2[s]

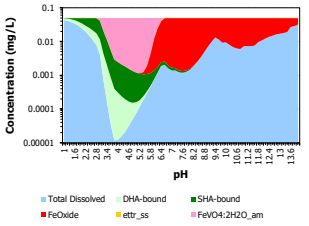

Concentration (mg/L)
pH
Total Dissolved
DHA-bound
SHA-bound
FeOxide
Clay
ettr_ss
Ba[SCr]O4[96%SO4]

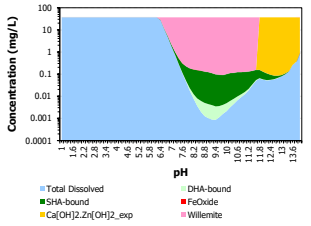

Concentration (mg/L)
DTL
Sr Profile at L/S=10 L/kg


Concentration (mg/L)
DTL
V Profile at L/S=10 L/kg


Concentration (mg/L)
DTL
Zn Profile at L/S=10 L/kg


Concentration (mg/L)
pH
Total Dissolved
DHA-bound
SHA-bound
FeOxide
ettr_ss


Concentration (mg/L)
pH
Total Dissolved
DHA-bound
SHA-bound
FeOxide
ettr_ss
FeVO4:2H2O_am


Concentration (mg/L)
pH
Total Dissolved
DHA-bound
SHA-bound
FeOxide
Ca[OH]2.Zn[OH]2_exp
Willemite

Model Comparison: residuals - Concentration

Name **Shredder waste NL for Lite**

Legend

Total Average Deviation Square root of the sum of the squared values of residuals divided by the number of values, over the entire X range.
User Average Deviation Square root of the sum of the squared values of residuals divided by the number of values, over the user defined X range.
Fractional Average Devi Square root of the sum of the squared values of residuals divided by the number of values, over the fraction.
Note that the Total and User Average Deviation columns are averages as well.

Residual details, concentrations

Residuals as log(model/sample)

Fraction	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*	*Total Avg*
pH	*3.81*	*4.46*	*5.65*	*6.15*	*8.61*	*10.2*	*11.0*	*12.0*	*Deviation*
Al	0.00	-0.18	-1.86	-1.83	0.70	1.25	-0.50	-0.60	0.39
Ba	0.02	0.00	0.17	0.23	0.01	-0.63	-0.63	-0.44	0.13
Br	-	-	-	-	-	-	-	-	-
Ca	0.00	0.08	0.21	0.24	0.23	0.11	0.04	0.17	0.06
Cd	-0.01	0.05	0.25	0.13	0.23	-0.09	-0.16	-0.30	0.06
Cl	-	-	-	-	-	-	-	-	-
Co	0.00	0.09	0.57	0.37	-1.01	-1.50	-1.06	-0.56	0.28
Cr	-0.89	0.03	0.14	0.09	-0.18	-0.50	0.03	0.77	0.16
Cu	-0.07	0.20	1.38	1.42	-1.33	0.53	0.29	-1.02	0.33
F	-	-	-	-	-	-	-	-	-
Fe	-0.06	-1.05	-1.34	-0.54	0.98	1.71	1.09	0.89	0.38
CO32-	-	-	-	-	-	-	-	-	-
Si	-0.52	-0.28	0.04	0.14	0.31	-0.24	0.73	0.77	0.16
As	1.23	-0.26	-0.11	-0.10	0.52	-0.32	-0.17	1.33	0.24
B	0.00	0.15	0.29	0.31	0.48	0.67	1.09	2.01	0.31
Hg	-	-	-	-	-	-	-	-	-
K	0.00	0.38	0.49	0.47	0.63	0.76	0.83	0.78	0.21
Li	0.00	0.23	0.30	0.30	0.05	0.71	0.88	0.44	0.16
Mg	0.00	0.02	0.17	0.22	0.42	0.08	0.52	0.25	0.10
Mn	0.00	0.31	0.48	0.54	0.38	0.76	-0.02	-0.30	0.15
Mo	-1.60	-0.78	1.43	1.42	0.61	0.23	0.00	0.15	0.35
Na	0.02	0.18	0.20	0.00	0.14	0.28	0.16	-0.53	0.09
Ni	0.00	0.22	0.44	0.48	-0.25	-0.70	-0.57	0.97	0.19
NO3	-	-	-	-	-	-	-	-	-
Pb	-0.03	0.23	1.58	1.79	-0.53	-1.46	-2.07	-2.38	0.53
P	-1.80	-1.26	-0.40	-0.30	-0.69	-0.85	-0.65	-0.37	0.33
Sb	0.94	-0.56	-0.41	-0.58	-0.81	-0.54	0.15	0.37	0.21
Se	0.61	0.60	-0.04	0.01	0.23	0.00	0.14	0.66	0.14
Sn	-1.32	-2.03	-0.28	-1.23	-0.22	0.53	1.28	1.85	0.45
S	0.01	0.00	0.00	0.01	0.05	0.06	-0.23	-0.30	0.05
Sr	0.00	0.23	0.31	0.29	0.44	0.32	-0.41	-1.05	0.17
U	-	-	-	-	-	-	-	-	-
V	-0.11	-0.43	-0.64	-0.23	-0.30	-0.79	-0.53	-0.42	0.17
Zn	0.00	0.21	0.55	0.65	-1.86	0.81	0.46	-0.30	0.28
Avg Deviati	0.12	0.11	0.14	0.14	0.12	0.15	0.14	0.18	0.22

Yellow = own pH All residuals within + 1 or - 1 are considered to represent a good fit.