Low crystallinity products of trace metal precipitation in neutralized pit lake waters without ferric and aluminous adsorbent: Geochemical modeling and mineralogical analysis

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Supplemental Information

This file contains the following information associated with the manuscript:

Table S1. Initial chemical composition of the neutralized waters from Cueva de la Mora and San Telmo (data from July 2009).

Table S2. Heavy metal concentrations (in mg/L) in surface waters from San Telmo (ST) and Cueva de la Mora (CM) pit lakes at pH 7.0.

Figure S1. Variation of the concentration of conservative elements (SO_4, Ca, Li, Mg, Rb, Sr) *vs*. pH in the studied waters.

Table S1

Chemical analyses (ICP-AES) of surface waters from the two acidic mine pit lakes used in the neutralization experiments
(taken from Sánchez-España et al., 2011)
(CM, Cueva de la Mora; ST, San Telmo)

Sample nº	Units	CM	ST
pH	S.U.	2.6	2.6
SO_4^{2-}	mM	20.9	42.7
SiO_2	mM	2.64	1.06
Al	µM	3814	6822
As	µM	0.6	0.9
Ca	µM	6678	9391
Cd	µM	0.1	2.2
Ce	µM	1.8	5
Co	µM	17	21
Cr	µM	0.5	0.1
Cu	µM	81	404
Fe	µM	1880	3339
K	µM	20	37
La	µM	0.6	2.0
Li	µM	22	51
Mg	µM	6350	27630
Mn	µM	324	882
Ni	µM	7.9	10
P	µM	1.6	13
Pb	µM	0.3	0.4
Rb	µM	5.0	12
S	µM	21719	45234
Sr	µM	4.0	3.5
Y	µM	2.2	4.5
Zn	µM	215	1319

Table S2

Heavy metal concentrations (in mg/L) in surface waters from San Telmo (ST) and Cueva de la Mora (CM) pit lakes at pH 7.0.

	Measured values		*Standard limits*			
Metal	**CM**	**ST**	Irrigation[1]	Drinking water[2]	Drinking water[3]	Drinking water[4]
As	0.03	0.06	0.2	0.05	0.05	0.1
Cr	b.d.	b.d.	1	0.05	0.1	
Pb	0.003	0.009	0.5	0.05	0	0.1
Cd	0.009	0.3	0.2	0.01	0.05	0.003
Co	1	1.3	-	-	-	-
Ni	0.47	0.66	2	0.01		
Cu	0.5	0.6	4	1	1.3	3
Zn	12.3	86.5	10	5		
Mn	17.2	50.1	-	0.1-0.4[5]		0.2

(1) NOM-001-ECOL-1996
(2) SEDUE (1989)
(3) US Environmental Protection Agency, 816-F-09-0004. May 2009
(4) World Health Organization, 1995
(5) Several sources

Figure S1

Variation of the concentration of conservative elements (SO_4, Ca, Li, Mg, Rb, Sr) *vs*. pH in the studied waters.