

Values registered for assessing water and soil quality in the mining region of Bor- October 2020

These data resulted by the sample collection and measurements campaign implemented in the Project RoRS337 - ROmania Serbia NETwork for assessing and disseminating the impact of copper mining activities on water quality in the cross-border area (RoS-NET2).

Table 1 – Results for surface waters

Category of surface water	Element/Parameter	Range (min-max)	Median	MAC	Content > MAC (%)
IV From Bor city to the confluence Bor and Timok River	Fe (mg/l)	0.069-1230.9	134.9	2	96.51
	Mn (mg/l)	1.8-115.8	5.9	1	100.00
	Cu (mg/l)	0.089-318.7	50.6	1	98.84
	Zn (mg/l)	0.28-43.2	7.5	5	88.37
	As (µg/l)	<2.1-25058	385.4	100	72.09
	Ni (µg/l)	7-16200	992	34	91.86
	Pb (µg/l)	<2.1-3718	493	14	83.72
	Cd (µg/l)	9.51-5375	715.8	0.9	100.00
	Cr (mg/l)	<0.005-0.14	0.020	0.25	0.00
	Hg (µg/l)			0.07	
	SO ₄ ²⁻ (mg/l)	1246.4-13964.3	2179.0	300	100.00
Category of surface water	Element/Parameter	Range (min-max)	Median	MAC	Content > MAC (%)

III From the confluence Bor and Timok River till to the confluence of Timok and Danube River	Fe (mg/l)	<0.007-0.16	0.034	1	0.00
	Mn (mg/l)	<0.006-0.78	0.47	0.3	50.00
	Cu (mg/l)	<0.005-0.33	0.064	0.5	0.00
	Zn (mg/l)	<0.005-0.76	0.30	2	0.00
	As (µg/l)	<2.1-4.4	3.62	50	0.00
	Ni (µg/l)	7-1600	362	34	66.67
	Pb (µg/l)	<2.1-5.9	5.9	14	0.00
	Cd (µg/l)	47.0	25.8	0.6	58.33
	Cr (mg/l)	<0.005	-	0.1	0.00
	Hg (µg/l)			0.07	
	SO ₄ ²⁻ (mg/l)	82.2-691.6	270.6	200	50.00
Category of surface water	Element/Parameter	Range (min-max)	Median	MAC	Content > MAC (%)
II From border with Hungary up to border with Bulgaria	Fe (mg/l)	<0.007-0.34	0.011	0.5	0.00
	Mn (mg/l)	<0.006-1.6	0.33	0.1	5.00
	Cu (mg/l)	<0.005-0.48	0.025	0.005 (T=10) do 0.112(T=300)	
	Zn (mg/l)	<0.005-0.037	0.037	0.3 (T=10) do 2(T=500)	0.00
	As (µg/l)	<2.1-14.8	4.8	10	15.00
	Ni (µg/l)	7-74	62	34	30.00
	Pb (µg/l)	<2.1-5.5	5.5	14	0.00
	Cd (µg/l)	<0.14-0.78	0.20	0.45	5.00
	Cr (mg/l)	<0.005	-	0.05	0.00
Hg (µg/l)			0.07		

	SO ₄ ²⁻ (mg/l)	26.7-1950.6	60.4	100	40.00
--	--------------------------------------	-------------	------	-----	--------------

Table 2 – Results for wells

Element/ Parameter	Range (min-max)	Median	MAC for drinking water	Content > MAC (%)
Mn (mg/l)	<0.006-5.8	0.057	0.05	28.89
Cu (mg/l)	<0.005-0.029	0.044	2	0.00
Zn (mg/l)	<0.005-0.46	0.051	3	0.00
As (µg/l)	<2.1-150.0	4.5	10	6.67
Ni (µg/l)	<0.007	-	0.02	-
Pb (mg/l)	<2.1	-	10	-
Cr (mg/l)	<0.005	-	0.05	-
Mo (mg/L)	<0.007	-	0.07	-
Hg (mg/l)	<0.0005	-	0.001	-
SO ₄ ²⁻ (mg/l)	52.7-1509.6	339.8	250	73.33

Unfortunately, water from wells also contains high concentrations of Mn, As, and Zn.

Table 3 – Results for soil samples

Element/ Parameter	Range (min-max)	Median	MAC	Content > MAC (%)	Remediation values	Content > Remediation values (%)
-----------------------	--------------------	--------	-----	----------------------	-----------------------	--



Cooperation beyond borders.

Interreg-IPA Cross-border Cooperation Romania-Serbia Programme is financed by the European Union under the Instrument for Pre-accession Assistance (IPA II) and co-financed by the partner states in the Programme.

Project RoRS337 - ROMANIA SERBIA NETWORK for assessing and disseminating the impact of copper mining activities on water quality in the cross-border area (RoS-NET2)

As (mg/kg)	43.2-959.1	217.3	42	100.00	55	97.62
Cd (mg/kg)	<0.71-5.3	1.9	6.4	0.00	12	0.00
Cr (mg/kg)	33.7-316.7	144.6	240	19.05	380	0.00
Cu (mg/kg)	197.6-12478.6	973.0	110	100.00	190	100.00
Hg (mg/kg)	<0.1-3.3	0.1	1.6	2.38	10	0.00
Pb (mg/kg)	41.1-1322.6	333.7	310	52.38	530	33.33
Ni (mg/kg)	1.7-72.3	13.7	44	9.52	210	0.00
Zn (mg/kg)	51.1-6009.3	301.9	430	40.48	720	38.10

Table 4 – Results for sediment samples

Element/ Parameter	Range (min-max)	Median	MAC	Content > MAC (%)	Remediation values	Content > Remediation values (%)
As (mg/kg)	9.9-2146.2	204.9	42	50.00	55	50.00
Cd (mg/kg)	<0.71-26.0	4.8	6.4	33.33	12	16.67
Cr (mg/kg)	83.7-413.4	184.5	240	33.33	380	8.33
Cu (mg/kg)	59.8-7225.5	2917.1	110	83.33	190	83.33
Hg (mg/kg)	0.1-0.3	0.1	1.6	0.00	10	0.00
Pb (mg/kg)	19.7-1155.5	262.7	310	50.00	530	33.33
Ni (mg/kg)	14.2-71.5	36.3	44	41.67	210	0.00
Zn (mg/kg)	38.2-6562.6	1875.9	430	58.33	720	50.00