Overbank sediments used for regional geochemical mapping and research of environmental contamination

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Samples of the sediments collected from the alluvial plains of Serbia were silts to gravelly-sands. Development of river bank profile depends on position of the flows and duration of sedimentation process. In the mountainous areas overbank sediments were less developed and coarser grained, while in the plain flows, they are fine grained and abundant. Containing geochemical inscription of the wider drainage area, they were used for Regional geochemical mapping of Serbia and for determination and analysis of anthropogenic influence on selected areas.

Variations of the chemical compositions in the river bank profile as the result of natural conditions and anthropogenic influence are very indicative and manifested in different concentrations of elements in the profile levels. We have chosen locations in the different parts of Serbia (Table 1).

values in ppm		**As**	**Pb**	**Cu**	**Zn**	**Cd**
Nera River	A	8.9	95	185	98	1.3
	OB	13.4	270	60	988	3.8
	S	12.5	180	40	468	1.9
Borska River	A	15.0	19	500	58	0.7
	OB	20.0	34	300	60	1.2
	S	7.0	82	6222	75	0.8
Djetina River	A	-	30	125	159	0.9
	OB	-	67	1873	1837	1.0
	S	-	39	381	424	1.0
Kriva Reka River	A	40	714	58	1150	9.4
	OB	45	377	56	1160	5.6
	S	177	1580	428	38900	85.5

A=A-horizon.; OB=overbank sediments; S=stream sediments

Results are presented on the geochemical maps, diagrams and tables. Differences in the contents of the some elements in some levels (A, OB, STR) reflect anthropogenic influence on environment and represent basis for the study of pollution, metallogeny, geomedicine, spatial planning etc.

Specific geochemical behavior of the oil as evidence of its abiotic origin

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Among the evidences of participation of deep fluids in formation of oil accumulations are the results of geochemical studies. The long-term study of micro-elemental composition of oil suggests the presence of a wide range of metals in oil. Both the presence and composition of these metals could not be related to rocks of the sedimentary cover. For example, sometimes the abundances of volatile chalcophile and dispersed elements characteristic of basal and ultrabasic rocks (Hg, Au, Ag, Cu, Re, Se, As, *et al*.) are ten to hundred times higher than the Earth's crust Clarke values. Moreover, oil contains high-charge and high-ionic lithophilous elements (U, Th, REE, Zr *et al*.) characteristic of alkaline and ultra-alkaline rock complexes. In addition platinoids, among which palladium is predominating, are found in oil. Palladium is commonly predominating over the total of Ru+Ir+Rh. Interrelation between these components is controlling the geochemical classification of oil provinces by platinum metal specialization. The presence of chromium, cuprum, nickel and cobalt in oil in addition to platinoids is indicator of the chemical and metallogeny features of platform hyperbasites. Of much importance is the presence of a sharply defined positive europium anomaly in hondrite-normalized distribution of rare elements in oil that is unusual for host rocks, formation water and organic material. Finally, the inconsistence of isotopic composition of neodymium and strontium enclosed by oil and the isotopic composition of bitumoids of probable oil source rocks is found.

Presented are experimental data about the traces of migration of ascending fluids in the geological formations of oil areas and geochemical characterization of these fluids, produced by the analysis of mineral inclusions and differentiation products – bitumen. Discussed are possible sources and conditions controlling formation of such systems. Magmatic pulses on platforms created the multistage character of magmatism, both in time and in space, and the observed chemical differences. The intrusion of magmas and their stratification due to convection were followed by the final stage of the intrusion's development. This was accompanied by substantial losses of thermal energy and by the concentration of a major portion of the fluid and incoherent elements in the upper part of the magmatic chamber. The composition of separated magmatic fluids of the C-O-H-N-Cl-F-S-P system can vary depending on the chemistry and the stable depth of their sources. This mainly occurs due to the binding of hydroxyl in minerals of overlying rocks and the TRUNCATED