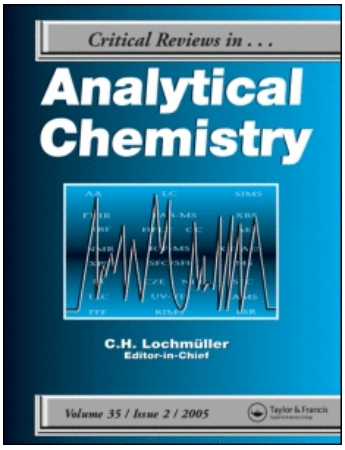

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INVESTIGATIONS OF DRINKING WATER AND SOIL QUALITY IN ŠIRVINTOS REGION

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In Širvintos region drinking water and soil were investigated at 15 sites - 10 wells and water in 5 watering-places and adjacent soil. Six points are in the town of Širvintos, the rest - in the region of Širvintos. The samples were taken three times - in May, June, September-October of 1996.

There were determined factors worsening organoleptic water characteristics, substances of anthropogenic origin, trace elements - fluorine and iodine (see Table). Besides, there was made analysis of heavy metals (Pb, Cu, Cd, Cr, Ni, Mn, Zn) by the method of atom absorbtion spectrometry.

Soil analyses were performed, namely, pH, dry and heated water extracted residues and the levels of ammonium, chlorides, sulphates, phosphates, fluorides (mg/kg).

Water in bore-wells was found to be contaminated by organic substances (17% of samples), by phosphates (20%) and by nitrates (37%). Increased level of ferrum was detected in water from the water-supply system (17% of samples)(see Table). There were found low concentrations of fluorides (<0.18-0.4 mg/l) and iodides (<0.06 mg/l) in drinking water. Soil was contaminated by nitrates (24% of samples) - the values ranged from 7 to 252 mg/kg.

There were established the following mean levels of heavy metals in water taken from the wells of Širvintos region: Pb - 1.38, Cu - 3.09, Cu - 0.56, Cr - 2.23, Ni - 2.61, Mn - 9.8, Zn - 351 μg/l, in water from the water-supply system: Pb - 0.78, Cu - 4.69, Cd - 0.11, Cr - 1.55, Ni - 2.65, Mn - 33.98, Zn - 396 μg/l. Mean levels of heavy metals established in soil are as follows: Pb - 0.348, Cu - 0.143, Cd - 0.0336, Cr - 0.170, Ni - 0.114, Mn - 8.19, Zn - 16.38 mg/kg.

Analysis data of water from wells and water-supply system

	Well water (n=30)			Water-supply water (n=15)			MAC
	min.	max.	mean	min.	max.	mean	
pH	7.2	8.1	7.5	7.3	7.9	7.5	6.0-9.0
Mineralization, mg/l	230	750	513	290	430	344	1000
Permang. Oxidation., mg O/l	0.6	13.2	2.9	0.8	5.3	2.3	5
Hardness., mg-equiv./l	5	13	9.5	6	8	7	7
Ca^{2+}, mg/l	67	170	134	81	111	98	200
Mg^{2+}, mg/l	17	74	35	13	35	24	150
SO_4^{2-}, mg/l	15	171	74	0	39	7	500
PO_4^{3-}, mg/l	0	42	3	0	0.2	0.1	3.5
NH_4^+, mg/l	0	0.6	0.2	0	1.3	0.6	2.0
Fe^{2+},Fe^{3+}, mg/l	0	0.9	0.3	0	7.9	2.1	0.3
NO_2^-, mg/l	0	0.04	0.004	0	0	0	3.3
NO_3^-, mg/l	5	117	47	0	38	8	50
Cl^-, mg/l	6	160	49	1	27	9	350
F^-, mg/l	<0.18	0.4	0.3	<0.18	0.3	0.2	1.5
J^-, mg/l	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	