RESEARCH ON LEAD CONTENT IN WATER AND WATER WELLS IN THE TOWN OF BAIA MARE

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Abstract
Monitoring of lead contamination in the aquatic environment is done by determining lead in surface water, water groundwater and drinking water. Water samples collected in cans or polyethylene following the rules of collection of surface waters according to ISO 5667-6. Determination of lead was done using an atomic absorption spectrometer equipped with hollow cathode lamps corresponding metals caused a device to allow correction or lamps and a nonspecific absorbance ensemble nebulizer - burner for flame air – acetylene.

Key words: lead contamination in water, water wells, atomic absorption spectrometer

INTRODUCTION

Effect of lead contamination in the aquatic environment is dependent on the type of lead involved. Inorganic lead is similar to other metals action aquatic environment can suffer complexation processes, forming compounds organic toxic potential increased significantly compared with that of inorganic lead. Monitoring of lead contamination in the aquatic environment is done by determining lead in surface water, water groundwater and drinking water. Surface water levels are determined variable, dependent on the source of pollution levels in sediment and system characteristics (pH, temperature, etc.). In urban areas levels in surface water is higher than in areas rural.

MATERIAL AND METHODS

144 were collected and analyzed surface water samples from four one per month over 5 (five) years from 2004 to 2008 of Săsar river, the river Lapus, Somes River and 114 samples from wells in jedeţul Maramures, during 4 (four) years from 2006 to 2009. Water samples collected in cans or polyethylene following the rules of collection of surface waters according to ISO 5667-6. Determination of lead was done using an atomic absorption spectrometer equipped with hollow cathode lamps corresponding metals caused a device to allow correction or lamps and a nonspecific absorbance ensemble nebulizer - burner for flame air – acetylene.

RESULTS AND DISCUSSION

The levels of lead in systems analyzed in Table 1 and fig.1.

Table 1

The levels of lead in the monitored sections			
Year	References river	Values (mg/l)	
		minime	maxime
2004	Săsar - upstream Baia Mare	0.011	0.249
	Lăpuş - upstream Buşag	0.007	0.044
	Someş - Cicârlău	0.009	0.04
2005	Săsar - upstream Baia Mare	0.008	0.05
	Lăpuş - upstream Buşag	0.01	0.07
	Someş - Cicârlău	0.001	0.027
2006	Săsar - upstream Baia Mare	0.028	0.006
	Lăpuş - upstream Buşag	0.003	0.029
	Someş - Cicârlău	0.002	0.02
2007	Săsar - upstream Baia Mare	0.001	0.035
	Lăpuş - upstream Buşag	0.003	0.032
	Someş - Cicârlău	0.005	0.03
2008	Săsar - upstream Baia Mare	0.005	0.04
	Lăpuş - upstream Buşag	0.003	0.032
	Someş - Cicârlău	0.009	0.04

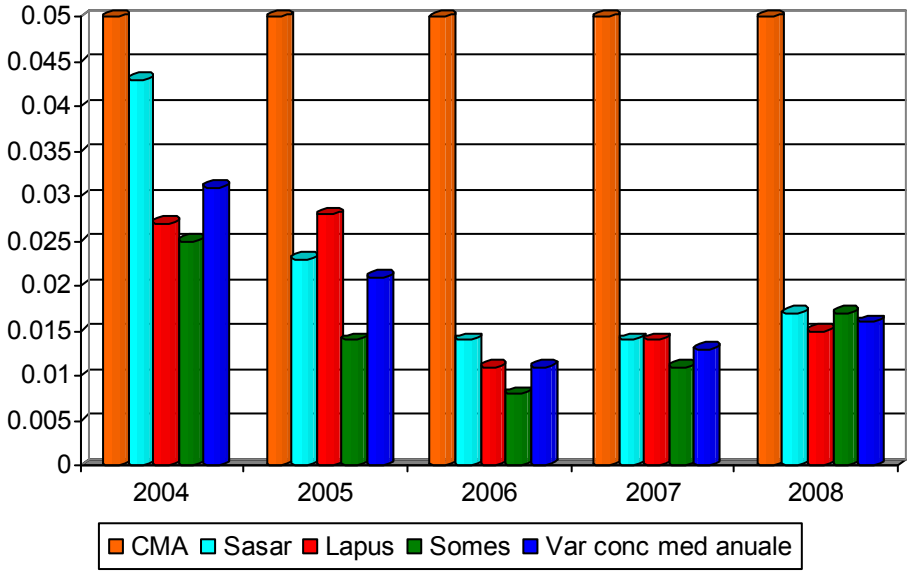

Fig.1. The levels of lead, minimum and maximum sections monitored

CONCLUSIONS

1. Sources of pollution remain a major manufacturing and service companies: SC.Romplumb, SC. Cuprom SA, ore processing plant, untreated mine water, ponds, unprotected dumps.
2. The discharge of polluted water into the river Săsar following changes occur as the river:
- Increase in monthly average concentrations of lead in water from 0.011 mg / l (June 2004) to 0.249 mg / l (September 2004) at 0.008 mg / l (June 2005) to 0,050 mg / l (December -2005) of 0.006 mg / l (June 2006) to 0.028 mg / l (October 2006), from 0.001 mg / l (June 2007) to 0.035 mg / l (October 2007), 0,005 mg / l (June 2008) to 0.04 mg / l (September 2008) Class Ia maintain river quality.
3. At the edge of the river confluence with the River Lapus Săsar determine a change in water quality which comprises: - Increase in monthly average concentrations of lead in water, with values of 0.007 mg / l (June 2004) that 0.044 mg / l (March 2004), 0.01 mg / l (October 2005), 0.07 mg / l (March 2005), from 0.003 mg / l (February 2006) to 0.029 mg / l (July 2006), from 0.003 mg / l (February 2007) to 0.032 mg / l (July 2007), to 0.003 mg / l (February 2008) to 0.032 mg / l (July 2008), without exceeding the MAC's of 0.05 mg / l, maintaining river quality in the category Ia.
4. Annual average concentration of water in the monitoring sections had the following percentages: 2004, CMA = 0.043 mg / l, 2005, CMA = 0.023 mg / l, 2006, CMA = 0.014 mg / l, 2007, CMA = 0.014 mg / l, 2008, CMA = 0.017 mg / l, which shows a continuous decrease of lead concentrations in the water element, due to the reduction of discharges from primary sources, otherwise conventional pollutants.

5. Increasing lead concentrations over the MAC = 0.05 mg / l, caused the river to be degraded Săsar a length of about 20 km downstream of Baia Mare and Lăpuş river over a length of about 10 km after the confluence with the river Săsar, causing further pollution of the river Someş.

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