

ENVIRONMENTAL POLLUTION IN THE CATCHMENT AREA BÂRZAVA

POLUAREA MEDIULUI IN BAZINUL HIDROGRAFIC BÂRZAVA

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Abstract: The elaboration of this paper has a main purpose the accentuation of the pollution sources and the negative effects produced by them on the environmental. The changes due to pollution have an influence over people's health, the need for food, water or air, whereas people influence more and more the environment, the needs and requests become higher also showing the consequences over the environment changes.

Rezumat: Elaborarea acestei lucrări are drept scop evidențierea surselor de poluare și a efectelor negative produse de acestea asupra mediului înconjurător. Schimbările datorate poluării influențează starea de sănătate a populației, satisfacerea nevoilor de hrană, apă sau aer, întrucât omul influențează tot mai pregnant mediul, iar cerințele și nevoile devenind tot mai mari, având implicit consecințe asupra modificărilor mediului înconjurător.

Key words: catchment area, pollution sources, quality, pollution

Cuvinte cheie: bazin hidrografic, surse de poluare, calitate, poluare

INTRODUCTION

The main importance of water is not remarked until this cannot be used or the water resources are not enough. As a result of the industry development, the habitations and the use of fertilizers as pesticides in forming, the quality of Bârzava River has been affected different in intensity. The pollution on Bârzava River, due to the anthropic activities is 90 % constantly.

Bârzava river is 127 km long and it has a catchment area surface of 971 km², originating in the north and the west side of Semenice Mountain, at altitude 965 m. Bârzava river collects in the superior course through Semenice channel, the brooks which drain a surface of 30 km² and through Zănoaga channel, it takes the water from Nera's basin for almost 13 km. after it crosses Reșița, Bârzava cuts across Dognecea Mountains and from Bocșa where it records an average flow of 4,14 m³/s, comes into Moravița is field stretching its channel more and more which presents divagations.

Downstream of Șoșdea, Bârzava River leaves Caraș-Severin County, reaching Timiș County, flowing into Timiș River in the Serbian territory.

MATERIAL AND METHOD

To determine the extension and intensity of pollution phenomena there were made geomorphological and pedological researching; were used the determinations and the measuring made on the Bârzava River by Apele Române in the following sections: Crivaia, Gătaia, Moniom, reckon with the superior amount.

The analyses were made according to the ICPA Methodology and operating STAS.

RESULTS AND DISCUSSION

The permanent sources of pollution on Bârzava are represented by the liquid sweepings of the humans. Usually these sources are rhythmical and well known. The anatomy of water quality was realized in two sections:

- water head - upstream Reșița. The water quality in this section was good.

- upstream Reșița – to the border line county. On this section you can feel the negative effects of the residual waters from Reșița area (Gospodăria Comunală, C.S.R, U.C.M.R.), Bocșa area (Bocșa canalization, the diffuse farm and poultry butchery) and the supplies of diffuse pollution sources.

That's why the water quality on this section was unsatisfied, employed due to the indicators from the nutrients group, mineralization degree, as well as overtaking at the metal group.

In Moniom section (downstream Reșița) on Bârzava river, the observation section with daily determination (pH, water temperature, oxygen, CCO – Mn/O₂, steady residue, chloride, ammonium, cyanides) they were made in S.G.A Reșița Laboratories.

The water quality was situated in the second class limits, except ammonium bigger than 0.3 mg N/l in 365 days (max. 3.95 mg N/l) and CCO-Mn/O₂ in 11 days with major values than 10 mg/l (max. 23.4 mg/l).

In Moniom section, because of the fond pollution and the improper activity of cleaning stations from Reșița, there were recorded outbalances of the water normal values. Between 2002 and 2003 the water quality was followed in 4 sections (Crivaia, Moniom, Gătaia, Partoș).

Table 1

Quality categories in observation sections of Bârzava river

	Water course	Cross section	Quality categories		Evolutions tendencies
			2002	2003	
1	Bârzava	Crivaia	I	I	bound state
2	Bârzava	Moniom	I	II	aggravation
3	Bârzava	Gătaia	I	I	bound state
4	Bârzava	Partoș	I	I	bound state

In the above mentioned table it is described water quality evolution in catchment area Bârzava, you can observe there that from the river head fill to the border, all the directive groups of water quality belong to first category of pollution in 2002.

In 2003 were recorded some over flow of ammonia values, phenol values, iron, phosphorus and zinc values, downstream from Moniom till the confluence with Gârliște brook. For this section it was chosen the second category of quality which carried the aggravation of the water quality.

These tendencies are due to the water evacuation from Reșița area (PRESCOM Reșița) and also from Bocșa (poultry farm and sewerage of Bocșa city).

The main garbage pollution sources are:

- SC PRESCOM Reșița, where were recorded over flows according to NTPA 001/2002 at indicators: suspensions (between 50.977 mg and 88.004 mg), ammonium (between 5.125 mg and 17.016 mg), detergents (between 0.656 mg and 18.278 mg), CCOCr (between 95.945 mg and 127.205 mg), Cu (between 0.103 mg and 0.108 mg), Nt (between 13.556 mg and 11.995 mg) and Pt (between 1.541 mg and 1.84 mg) (after Planul de management al Spațiului hidrografic Banat, 2005);
- Gosint Banat, where were recorded overflows to the follow indicators: suspensions (between 73.009 mg and 90.119 mg), CBO₅ (16.443 mg), NH₄ (between 8.618 mg and 9.225 mg), detergents (between 0.646 mg and 0.781 mg),

extractive (between 5.445 mg and 6.933 mg) (after Planul de management al Spațiului hidrografic Banat, 2005).

The industrial pollution sources are:

- Uzina Constructoare de Mașini Reșița, where were recorded overflows to the follow indicators: suspensions (between 37.333 mg and 73.583 mg), extractive (between 5.046 mg and 8.812 mg), detergents (0.052 mg), CCOCr (46.179 mg), Cu (between 0.096 mg and 0.124 mg), Zn (between 0.117 mg and 0.201 mg) and Ni (between 0.108 mg and 0.112 mg) (after Planul de management al Spațiului hidrografic Banat, 2005);
- SC Combinatul Siderurgic Reșița, where overtaking in accordance with NTPA 001/2002 record the following values for the indicators: suspensions (between 39.1 mg and 62 mg), extractive (between 6 mg and 11.9 mg) and Cr (0.13 mg) (after Planul de management al Spațiului hidrografic Banat, 2005).

Because of the dump, the draining lakes, the cinder and ash dump which are the main pollution sources of the soil, there are still presented the capacities and the area occupied by these.

Table 2

Areas occupied by dump, draining lakes, cinder and ash dump

	Name	Type	Capacity	Busy area (ha)
1	Doman Career	Dump cote 420	618.00 (10 ³ m ³)	31.00
		Dump cote 430	403.40 (10 ³ m ³)	2.30
		Dump 2	2.70 (10 ³ m ³)	0.60
		Dump 3	6.10 (10 ³ m ³)	0.80
		Dump cote 354	94.90 (10 ³ m ³)	0.20
		Dump Paulus	29.10 (10 ³ m ³)	0.25
2	Mining section Bocșa	Pond 1	3480000 (t)	12.64
		Pond 2	280000 (t)	10.57
		Țerova pond	150000 (t)	4.00
3	C.S.Reșița	Slag dump A	6000000 (t)	31.50
		Slag dump B	2500000 (t)	15.50

The soil pollution includes the disorder which interferes in the soil attributes which affect the function and the soil fertility also:

Table 3

Hard metal in Reșița area – soil (ppm) (after OSPA, Timișoara)

	Profile	Depth (cm)	Brutish sand	Fine sand	Dust	Clay	pH	Humus	Pm ppm	Km ppm	V%
1	Țerova, slope	0-25	14.8	43.0	20.3	21.9	4.90	2.20	8	60	60.4
2	Țerova, dump	0-15	24.2	39.2	23.4	13.2	5.80	2.68	7	48	68.9
3	Găvondari	0-20	14.2	56.5	20.7	8.6	5.94	3.24	17	40	77.6
		20-50	14.0	46.7	22.0	17.3	5.94	2.80	11	70	82.0
4	Doman Dump	0-10	27.6	33.2	19.6	19.6	6.45	3.72	11	96	92.1
5	Valley Doman	0-18	14.7	33.0	31.5	20.8	5.94	3.28	10	76	80.2
6	Reșița, slope	0-10	22.6	34.9	24.8	17.7	6.52	3.26	36	108	88.8
7	Câlnic	0-7	5.6	38.2	37.0	19.2	5.75	2.10	-	-	72.5

CONCLUSIONS

The water and soil quality requests a good knowledge of the pollution process and the stopping as much as possible of the direct and indirect pollutants.

Concerning the soil pollution with air drift substances, relieves some properties:

- the most polluted soils are in the neighbourhood of the main sources (dump, CSR area);
- if the high of the evacuation chimneys grows, the soil pollution is reduced as intensity, but in exchange the surface exposed to pollution stretches.

Hard methods of polluting the soil and water go down the quantitative and qualitative agricultural products.

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