STUDY ON WATER QUALITY OF THE AMPOI RIVER ALBA COUNTY

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Abstract. *Water is essential to the existence of all life, is the most vital element among the natural resources Water quality has been damaged due to pollution. Industry, population growth and transport are the main sources of pollution. Pollution of rivers is a main topic in environmental pollution problem. Pollutants in the air and soil can easily reach nearby watercourses. The purpose of this paper is to determine the impact it has urban wastewater discharge on water quality Ampoi River. Water quality can be determined depending on the organoleptic, physical, chemical, biological and bacteriological characteristics and it is influenced by the discharge of untreated waste water I selected three points on the river Ampoi where we collected samples for laboratory analysis. Using standard laboratory equipment we determined six Ampoi river water quality parameters. The parameters we have determined are: pH, suspended solids, chemical oxygen demand, biochemical oxygen demand, ammonia nitrogen and detergents. The results obtained were compared with the values of the water quality classes.*

Key words: *polluted water sources pollution, water quality, pH*

INTRODUCTION

Ampoi River rises in northeastern Metaliferi Mountains, at the foot Dosu and Petriceaua peaks, at an altitude of 1220 m. Ampoiului is a right tributary of Mures downstream from Alba Iulia. Measure 60 km length of the river and catchment area is 579 km2 basin is located on the territory of Alba county.

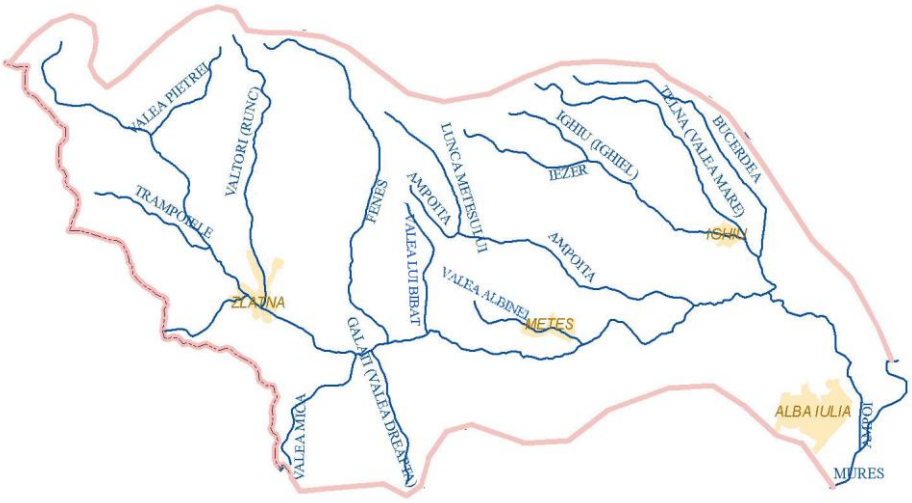

Figure 1 Ampoi River

The constant progress of civilization, which include urbanization and industrialization, and production entails a huge amount of pollutants that can cause ecological imbalance, with adverse environmental effects, living creatures, human health.

For these reasons was aimed at assessing the quality of river water Ampoi over a long period on the assumption that Ampoi river was contaminated by leaking waste and wastewater from activities in areas through which the river Ampoi.

Water is one of the items indinspensable life on earth should be treated accordingly. The quality of water is affected by human activities and is declining due to the rise of urbanization, population growth, industrial production, climate change and other factors. The resulting water pollution is a serious threat to the well-being of both the Earth and its population.

Water is considered polluted if some substances or condition is present to such a degree that the water cannot be used for a specific purpose. Olaniran (1995) defined water pollution to be the presence of excessive amounts of a hazard (pollutants) in water in such a way that it is no long suitable for drinking,bathing, cooking or other uses. Pollution is the introduction of a contamination into the environment (Webster.com, 2010). It is created by industrial and commercial waster, agricultural practices, everyday human activities and most notably, models of transportation. No matter where you go and what you do, there are remnants earths environmental and its inhabitants in many ways. The three main types of pollution are: Land Pollution, Air Pollution and Water Pollution. Both for the purpose of this research, emphasis are on water pollution and control.

Polluted drinking water or water polluted by chemicals produced waterborne diseases like, Giardiasis, Amoebiasis, Hookworm, Ascariasis, Typhoid, Liver and kidney damage, Alzheimer's disease, non-Hodgkin's Lymphoma, multiple Sclerosis, Hormonal problems that can disorder development and reproductive processes, Cancer, heart disease, damage to the nervous system, different type of damages on babies in womb, Parkinson's disease, Damage to the DNA and even death, meanwhile, polluted beach water contaminated people like stomach aches, encephalitis, Hepatitis, diarrhoea, vomiting, gastroenteritis, respiratory infections, ear ache, pink eye and rashes

Water pollution can be measured by various means viz. physical, chemical and biological. In physical testing properties such as temperature, solid concentrations and turbidity are measured. In chemical testing, water samples are analyzed using principles of analytical chemistry. Methods include pH, Biochemical oxygen demand, chemical oxygen demand measurements. Biological testing involves the use of plant, animal, and/or microbial indicators to monitor the health of an aquatic ecosystem

MATERIALS AND METHOD

Methods of analysis used for determining Ampoi river pollution due to the discharge of urban waste waters are regulated by law.The analyzes were performed in a laboratory equipped to adequately determine the parameter values in the study. standards used for this study are :

- ✓ was used for pH - SR ISO 10523-09;
- ✓ was used for materials in suspension - STAS 6953 – 81;
- ✓ was used for the residue filtered 105°C (mg/l) - STAS 9187 – 84;
- ✓ was used for CCOCr (mgO2/l) - SR ISO 6060-96;
- ✓ was used for CBO5 (mgO2/l) - SR ISO 5815-98;
- ✓ was used for azot amoniacal (NH4+) (mg/l) - SR ISO 7150/1 – 01;
- ✓ was used for detergents - SR ISO 7825/1-96;
- ✓ was used for substances extractables SR 7587-96

RESULTS AND DISCUSSION

Table 1 presents the values of the parameters analyzed. The values are lower than the maximum limit for class 2 water quality conformable order 161/ 2006 approving the norms concerning the classification of surface water quality in order to establish the ecological status of water bodies.

Table 1

The values of the parameters

Parameter	permissible limit *cl. I de cal*	permissible limit ***cl. II de cal***	***River Ampoi upstream Zlatna***			***River Ampoi upstream Şard***			***River Ampoi upstream Mureş***		
			Sample1	Sample2	Sample3	Sample1	Sample2	Sample3	Sample1	Sample2	Sample3
pH (pH units)	6,5-8,5	**6,5-8,5**	7,52	7,5	8,1	7,43	8.05	8,15	7,52	8	7,95
The filtered residue 105°C (mg/l)	500	**750**	97	103	95	91	87	85	100	94	90
CCOCr (mgO2/l)	10	**25**	11,7	10.5	15,8	10,6	11.5	16.4	13.4	10.3	17.3
CBO5 (mgO2/l)	3	**5**	1,25	1,3	1,61	1,42	1,27	1,8	1,17	1,35	1,75
Azot amoniacal ($NH4^+$) (mg/l)	0.4	**0.8**	0,059	0,063	0,071	0,442	0,518	0,494	0,698	0,553	0,617
Detergents (mg/l)	0,1	**0,2**	0,03	0,05	0,021	0,007	0,006	0,014	0,017	0,011	0,023

Processing of the data showed that:

- Ph of the water basin Ampoi fall within limits of environmental standanele. The values range between 7.43 and 8, 20. The small differences between the pH values can be seen in the following chart.

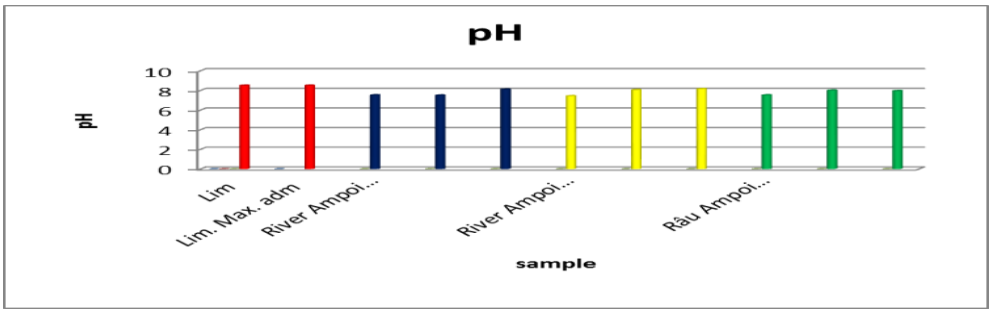

Figure 1 The values of pH

- The chart below one can see that in all monitoring samples, chemical oxygen demand, pollution indicator varies from 10.3 mgO2 / l to 17.7 mgO2 / l but none of the samples not permissible limit value it is exceeded.

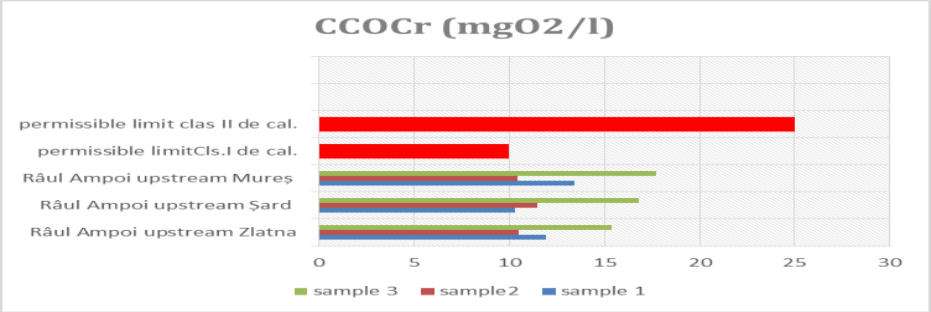

Figure 2 The values of CCOcr

- Both biochemical oxygen demand and ammonia in the river Ampoi are below the permissible standards, differences can be seen easily in the following graph.

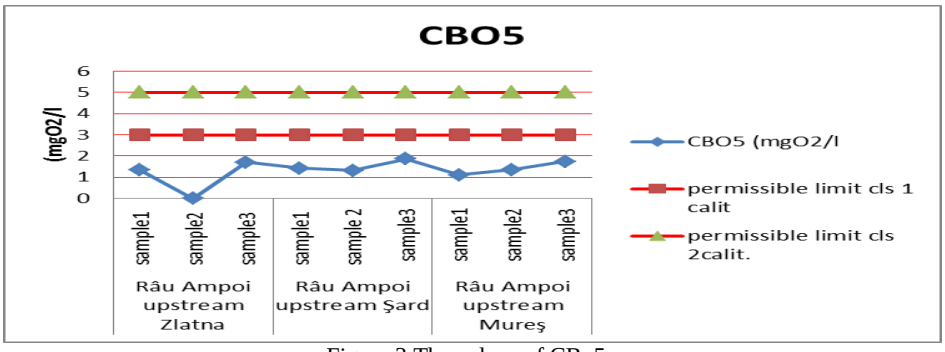

Figure 3 The values of CBo5

- In Ampoi River detergents are less than the maximum limits

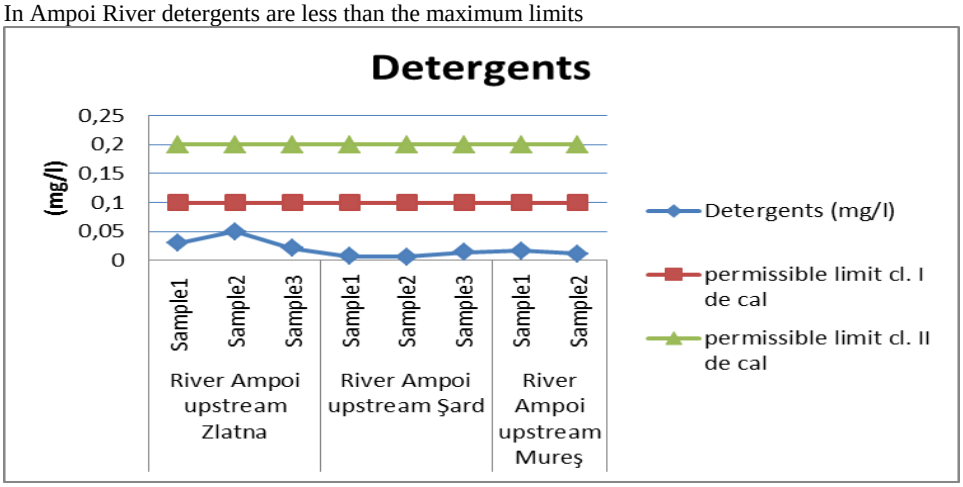

Figure 4 The values of Detergents

CONCLUSIONS

This study reported that analyzed parameters values are less than the maximum permitted levels for Class 2 water quality. At Two parameters were recorded higher values than allow Class 1 water quality. These parameters are: chemical consumption of oxygen, nitrogen respective ammonia (NH4 +).

From this study it can be concluded that Ampoi river water shows low levels of alterations as a result of human action and deviate only slightly from normal.

To increase the quality of water is recommended: Greening of Ampoi river, Environmental education, reduction the use of pesticides, avoid washing the cars in river, throwing waste water in river water.

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