

Analysis of physic-chemical parameters of drinking water in the peripheral areas of Prizren

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Abstract: In our paper we have analyzed the quality of drinking water in the rural area of the city of Prizren, rural areas are supplied by forty underground wells of the city. Where the production capacity is around 850 l/sec where about 60% of the city is supplied by pumps, 40% by gravity. The distribution network of drinking water pipes in contrast to the urban area which is from the sixties, in rural areas the distribution network is from the nineties, the composition of the distribution pipes is made of polyethylene materials, the distribution network is always attacked by illegal connections that can be sources of drinking water pollution this has also been the reason that pushed me to do this research. The biggest problem in protecting the quality of groundwater and surface water are industrial discharges, the close presence of stables, communal services, rainfall, outdated distribution network, illegal network connections.

The purpose of this paper is for us to know the quality of drinking water in the rural area of the city and from the analysis made it results that the quality of drinking water is 99% in accordance with normal values for drinking water. We checked the water quality in the March 2019 time interval at four sampling sites (Krua) in the rural suburban area of the city.

Keywords: Chloride (Cl), Ammonium ion (NH₄⁺), Nitrite (NO₃), Nitrate (, NO₂), Iron (Fe).

INTRODUCTION

Prizren is a city in the southwestern part of Kosovo and the second largest in Kosovo in terms of size and population after Pristina. The Municipality of Prizren has an area of 640 km², 5.94% of the territory of Kosovo is located in the southwest of Kosovo and with 76 settlements and 220,776 inhabitants of which in Prizren are about 170,000 inhabitants. In the middle of the city passes the river that after the name of the city is called Lumbardhi of Prizren.

The economy of the municipality of Prizren is mainly based on agriculture, trade, construction and food processing - all of these private enterprises. According to research on the amount of drinking water, Prizren is one of the richest cities in groundwater, almost the only one with these springs. In our city we have surface water which is not treated but drinking water sources are groundwater sources with a symbolic treatment, chlorination and some simple sand filters.

Surface water is used for the development of agricultural crops, livestock, food industry and tourism. The purpose of monitoring the quality of drinking water in the distribution network (Krua) is to analyse the quality of some physic-chemical parameters in the rural area [1-4].

MATERIAL AND METHOD

Analyses of physic - chemical parameters were performed in the Laboratory of the Southern Hydro Region of Prizren.

Samples for analysis were taken at four sampling sites: Tosus L1 neighborhood, Fatmir Berisha L2 Primary School, Aziz Tolaj L3 Primary School, Arbanë L4 Family Medicine Centre.

In the analysis are determined these physic-chemical parameters presented in the following table as well as in the diagram, Chlorides, Ammonium Ion, Nitrites, Nitrates, Iron.

Data were collected and recorded according to standardized methodologies.

The analysis of these above mentioned parameters were done with the modern equipment WTWinolab multi 720 (PH, OO tertiary, conductivity), Turbo 430 IR Turbiditymeter, (Turbidity), Spectroquant - Nova 60 (Cloture, Ionia onium, Nitrites, Nitrates, Iron, Manganese).

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SAMPLING

Sampling of drinking water for laboratory analysis was done according to known standards. In this paper we are dealing with the sampling of four sampling sites (Krua) always respecting the standard methodologies and based on ISO 5667-5 of 2006, for the standard sampling rules. In this way we have tried to avoid the possibility of contamination of water samples for study.

Sampling points for monitoring drinking water quality are presented in Figure 1 ^[4-7].

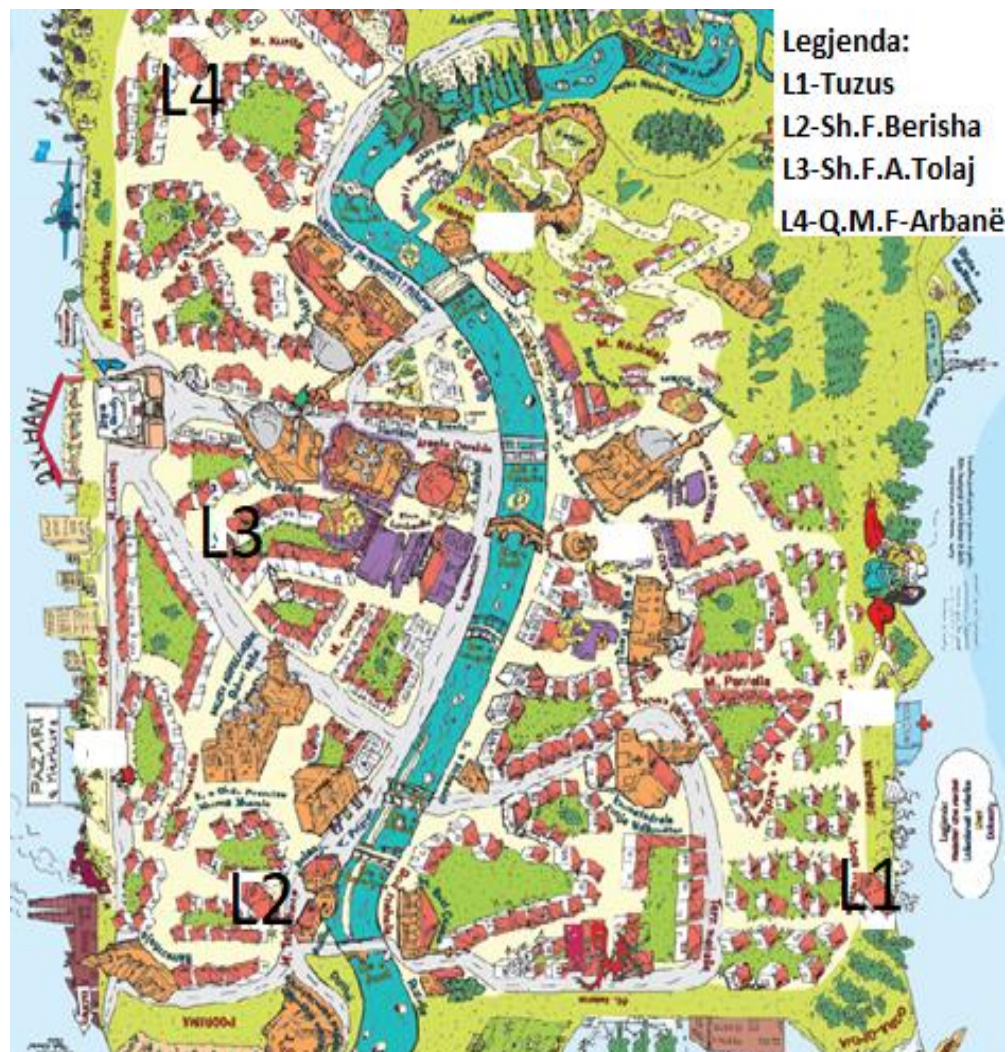


Figure 1. Map of sampling sites

Table 1. Presentation of some physic-chemical parameters of drinking water taken in Krua in the rural area Municipality of Prizren March 2019

	Date	25.03.2019	25.03.2019	25.03.2019	25.03.2019
Place of sampling		L ₁ . The tap Lagje, Tosu	L ₂ The tap Sh.f.F. Berish	L ₃ The tap Sh.f.A. Tola	L ₄ . The tap Q.M.F Arbanë
Parameter	Norma.				
Temp. 'C / K	8---20	12.7	12	13.1	14.4
Wind	Pa	Pa	Pa	Pa	Pa

Taste	Pa	Pa	Pa	Pa	Pa
Turbidity NTU	0-2.4	0.0	0.08	0.11	0.13
PH	6.8-9.9	8.18	8.14	8.16	8.9
KMnO4 (mg/l)	8to12	7.24	4.75	4.73	6.42
Clor Residence mg/l (DPD1/4)	0.05---0.5	0.32	0.21	0.22	0.23
Chloride mg/l Cl	200	0.2	1,6	1.5	2
Joni ammonium mg/l	0.1	0.05	0.03	0.03	0.05
Nitrite mg/l NO ₂	0.005	0.002	0.002	0.002	0.001
Nitrate mg/l NO ₃	10	0.5	0.4	0.5	0.4
Iron mg/l Fe	0.3	0.05	0.05	0.03	0.5
Manganic mg/l Mn	0.05	0.0	0.02	0.005	0.03
Conductivity M/S	1500	249	243	240	246
The presence O ₂	Over 3	3.36	3.94	3.93	3.95

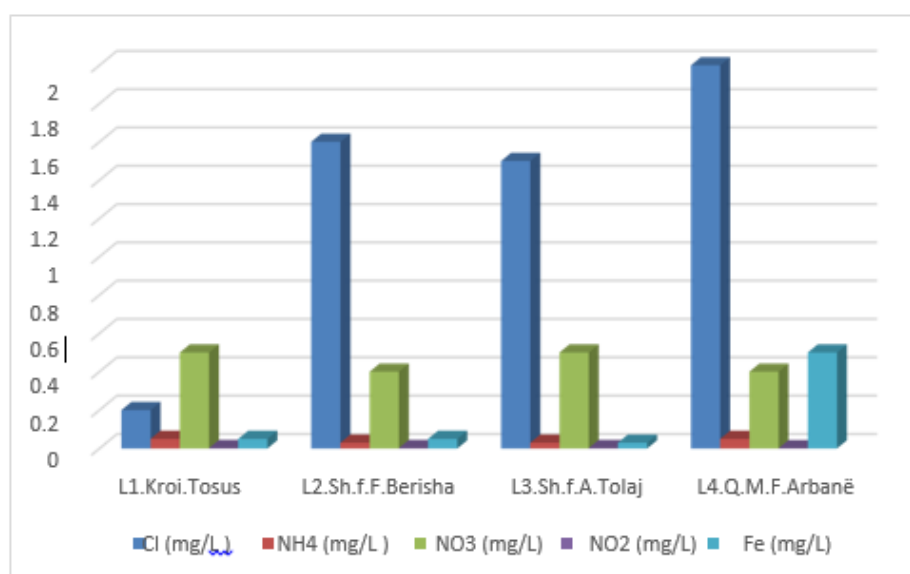


Figure 2. Graphic presentation of physico-chemical parameters of drinking water in the suburban area of the city of Prizren for the period, March 2019

DISCUSSION OF EXPERIMENTAL RESULTS

During the physico-chemical analysis of the quality of drinking water for some parameters presented in table 1 and fig 2, it results that the drinking water in the rural area of our city is within the standard of the administrative instruction 16/2012 for drinking water given by the Institute Kosovo National Public Health Based on data from the World Health Organization (WHO).

And from these present parameters it results that the origin of the groundwater of the drinking water in our city is clean with, good temperature, presence of high oxygen, good ph. So we did not have

leakage of pipes and it did not come to contamination, pollution during the distribution network, although outdated and with different composition, this has been the reason for this scientific paper^[4-7].

CONCLUSION

Based on the data presented in this paper we can conclude that:

- Our Municipal Bodies of Prizren still need to raise civic awareness in both urban and rural services
- The water database is not yet complete and is an obstacle to quality planning in the drinking water sector.
- There is a lack of investment for the construction of systems and plants for the treatment of drinking water, especially surface water, the increase of efficient services, the increase of drinking water supply.
- There is a lack of scientific research in the field of surface water in the absence of research institutes. Insufficient cooperation between governmental, non-governmental institutions and the public,^[5-11]

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