



Risk Assessment of Drinking Water Quality in Ap Vojvodina, Republic of Serbia

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Dear Editor-in-Chief

Drinking water is one of most important topic of interest to achieving global (and local) public health goals, and important part of sustainable development goals (SDGs). Water is essential for life. It has to be safe with improved quality, without any microbiological, physical or chemical hazards (1). Referring to data on the WHO, 57 million of people do not have safe drinking water and 26 million of people do not have elementary sanitary conditions (2). In the WHO, European Region diarrheal diseases causes an estimated 14 deaths per day due to inadequate water, sanitation and hygiene (3). Drinking water supply in rural areas in Serbia showed that drinking water from piped rural system is microbiologically safe in 67% and in compliance with proposed national rules for physical and chemical parameters in 56% of controlled samples, while for individual supplies it is 68% and 29%, respectively (4). The most effective means of ensuring the water safety of drinking water supply is with a comprehensive risk assessment and risk management approach (1).

The objective of our work was to assess the risk of drinking water quality (DWQ) in 45 settlements of Autonomous Province of Vojvodina

(APV), Republic of Serbia, using an international risk assessment matrix.

The data about DWQ were collected in 2016 by 7 regional public health institutions located in APV. The data were unified and evaluated in IPHV, considering 3 different types of drinking water (DW) available for population in APV: purified and disinfected (PDDW), non-purified, but disinfected (NDDW) and non-purified and also non-disinfected (NDW) water. For the risk assessment, standardize semi quantitative analyses defined in ISO standard EN 15975-2:2013 with 3x3 risk assessment matrix, which assesses the likelihood and consequences of a hazard, rating the risks as low, medium and high, was used. Hazards were identified according to the WHO Guidelines (1) and IARC classification (5). The severity of hazards was evaluated as high for the Group 1, 2A and 2B of carcinogens and for pathogens, as medium for Group 3 and 4 and coliforms and as low for non-hazardous chemical compounds and plate count which concentrations or number were over the national proposed level. The likelihood was rating according to presence of hazards in controlled samples of DW as high (>50%), medium (>5-≤50%) and low (≤5%).



The results have shown that among 45 settlements PDDW is provided in 17, NDDW in 40 and NDW in 24. Among settlements with PDDW the low risk was dominant (in 82%), but in settlements with NDDW and NDW the medium and high risk were mostly determinate (in 40% and in 50%, in 46% and 50%, respectively). The main hazards in NDDW and NDW were arsenic, nitrites, nitrates, coliforms and *Escherichia coli*. Consuming and using NDDW and NDW represents high risk for 74% of population living in the 24 settlements of APV.

Considering that risk assessment is not defined in Serbian national legislative for DW and that in DW in APV there are recognized hazards for human health, the systematical approach for ensuring DW safety and prioritizing risk assessment of DW intended for human consumption represents the greatest challenge in DW management. DW continual monitoring and improvement of DWQ of Vojvodina, with the aim of decreasing health risk for population, are among of the most important public health goals. Drinking water has an essential importance for ensuring basic needs of the population, and that basic need is in connection with third, sixth, and others SDGs.

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Conflict of interest

The authors declare that there is no conflict of interest.

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