

# 10<sup>th</sup> Eastern European Young Water Professionals Conference



## BOOK of ABSTRACTS

### New Technologies in Water Sector

7-12 May 2018 Zagreb, Croatia

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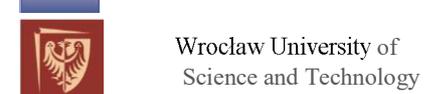
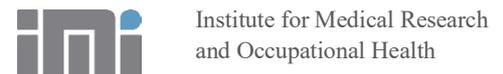
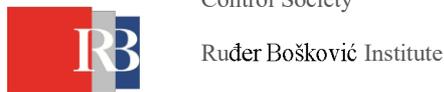
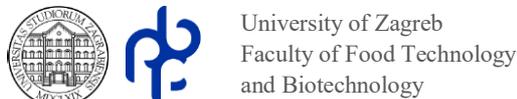
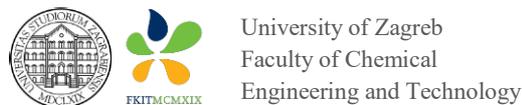
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**10<sup>th</sup> Eastern European Young  
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**New Technologies in Water Sector**

7-12 May 2018, Zagreb, Croatia

**BOOK of ABSTRACTS**



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**Editors:**

Maryna Feierabend

Olha Novytska

Dražen Vouk

Monika Šabić

**Typesetting:**

Olha Novytska

Maria Danilycheva

Liudmyla Odud

Ivona Nuić

Maja Djogo

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Maryna Feierabend

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**University of Zagreb,  
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Legal address: Fra Andrije Kačića-Miošića 26, 10 000 Zagreb (Croatia)

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# Drinking Water Quality Assessment of Meriç District (Edirne, Thrace Region of Turkey)

C. Tokatli, H. T. Bakaç, K. Tuna, E. N. Berber, B. N. Bulut, A. Sezer, H. Kaymaz, S. Akbal and İ. A. Helvacioğlu\*

\* Department of Laboratory Technology, Trakya University, İpsala, Edirne, Turkey  
(E-mails: [tokatlicem@gmail.com](mailto:tokatlicem@gmail.com); [cemtokatli@trakya.edu.tr](mailto:cemtokatli@trakya.edu.tr))

## INTRODUCTION

Meriç District is located on the south – western edge of Lalapaşa Plateau in the middle part of Edirne City in Thrace Region of Turkey. The surface area is 448 km<sup>2</sup> and there is no mountain in the district. The highest place is the Karayayla Hill, which is 130 meters uphill. The first largest valley in the region belongs to the Meriç River and the second largest valley in the region belongs to the Ergene River. There are also three streams and their valleys in the plateau. The county is semi – wet with respect to rainfall and the rainfall in autumn is quite high. Subsistence in Meriç District is agriculture and animal husbandry in general (T.C. KÜLTÜR VE TURİZM BAKANLIĞI, 2017); T.C. MERİÇ KAYMAKAMLIGI, 2017).

Ground water is the most important source of drinking water for numbers of villages located in Edirne Province and monitoring ground water quality in Meriç District has a critical importance for human health (Tokatli, 2014).

The aim of this study was to evaluate the drinking water quality of Meriç District by determining some water quality parameters including dissolved oxygen, oxygen saturation, pH, electrical conductivity (EC), total dissolved solids (TDS), salinity, turbidity, nitrate nitrogen (NO<sub>3</sub>), nitrite nitrogen (NO<sub>2</sub>), phosphate (PO<sub>4</sub>) and cyanide (CN).

## MATERIAL AND METHOD

Ground water samples were collected from 12 selected villages located in the Meriç District in autumn season of 2017.

Measurements of pH, electrical conductivity (EC), total dissolved solid (TDS) and salinity parameters were performed by using Hach branded (HQ40D) Portable Multi – Parameter Measurement Device and turbidity parameter was performed by using Hach branded (2100Q) Portable Turbidimeter Device during the field studies. Nitrate nitrogen (NO<sub>3</sub>), nitrite nitrogen (NO<sub>2</sub>), phosphate (PO<sub>4</sub>) and cyanide (CN) parameters were performed by using Hach branded (DR890) Colorimeter Device during the laboratory studies.

## RESULTS

Results of the physicochemical data in the groundwater of Meriç District with some national and international limit values were given in Table 1.

According to the criteria of Turkish Regulations identified for Turkey (Water Pollution Control Regulation in Turkey), Meriç District has I. Class water quality in terms of pH parameter; I. – II.

Class water quality in terms of cyanide, nitrite, nitrate, total dissolved solids, dissolved oxygen and oxygen saturation parameters; II. – III. Class water quality in terms of electrical conductivity parameter; and III. – IV. Class water quality in terms of phosphate parameter (Uslu and Türkman, 1987; Turkish Regulations, 2004; 2015).

**Table 1.** Results of detected parameters and some limit values

| Limit Values and the Results of Present Study            |  | Parameters   |                         |                |                |                        |              |              |                       |                       |                                    |              |
|--|--|--------------|-------------------------|----------------|----------------|------------------------|--------------|--------------|-----------------------|-----------------------|------------------------------------|--------------|
|  |  | DO (ppm)     | O <sub>2</sub> Sat. (%) | pH             | EC (mS/cm)     | <sup>a</sup> TDS (ppm) | Sal. (‰)     | Tur. (NTU)   | NO <sub>3</sub> (ppm) | NO <sub>2</sub> (ppm) | <sup>b</sup> PO <sub>4</sub> (ppm) | CN (ppm)     |
| <b>*Turkish Regulations Water Quality Classes (2015)</b> | <b>I. Class</b><br>(Very Clean)          | >8           | >90                     | 6.5-8.5        | 400            | 500                    | -            | -            | 5                     | 0.01                  | 0.02                               | 0.01         |
|  | <b>II. Class</b><br>(Less Polluted)      | 6            | 70                      | 6.5-8.5        | 1000           | 1500                   | -            | -            | 10                    | 0.06                  | 0.16                               | 0.05         |
|  | <b>III. Class</b><br>(Much Polluted)     | 3            | 40                      | 6.0-9.0        | 3000           | 5000                   | -            | -            | 20                    | 0.12                  | 0.65                               | 0.1          |
|  | <b>IV. Class</b><br>(Extremely Polluted) | 3>           | 40>                     | Out of 6.0-9.0 | >3000          | >5000                  | -            | -            | >20                   | >0.3                  | >0.65                              | >0.1         |
| <b>Drinking Water Standards</b>                          | <b>TS266 (2005)</b>                      | -            | -                       | 6.5-9.5        | 2500           | -                      | -            | 5            | 50                    | 0.5                   | -                                  | -            |
|  | <b>EC (2007)</b>                         | -            | -                       | 6.5-9.5        | 2500           | -                      | -            | -            | 50                    | 0.5                   | -                                  | -            |
|  | <b>WHO (2011)</b>                        | -            | -                       | -              | -              | -                      | -            | -            | 50                    | 0.2                   | -                                  | -            |
| <b>Drinking Water of Meriç District</b>                  | <b>Min</b>                               | 5.660        | 63.800                  | 6.750          | 198.000        | 99.000                 | 0.100        | 0.190        | 0.300                 | 0.000                 | 0.040                              | 0.002        |
|  | <b>Max</b>                               | 8.660        | 97.100                  | 8.400          | 1518.000       | 823.000                | 0.830        | 1.750        | 5.500                 | 0.040                 | 0.900                              | 0.023        |
|  | <b>Mean</b>                              | <b>7.849</b> | <b>88.267</b>           | <b>7.507</b>   | <b>859.167</b> | <b>455.833</b>         | <b>0.456</b> | <b>0.599</b> | <b>2.992</b>          | <b>0.008</b>          | <b>0.228</b>                       | <b>0.010</b> |
|  | <b>SD</b>                                | 0.772        | 8.458                   | 0.438          | 402.974        | 218.355                | 0.221        | 0.474        | 2.317                 | 0.011                 | 0.288                              | 0.006        |

<sup>a</sup>Turkish Regulations, 2004; <sup>b</sup>Uslu and Türkman, 1987; Sal. Salinity; Tur. Turbidity; Sat. Saturation  
TS266 – Turkish Standards Institute; EC – European Communities; WHO – World Health Organization

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