

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



## BOOK of ABSTRACTS

### New Technologies in Water Sector

7-12 May 2018 Zagreb, Croatia

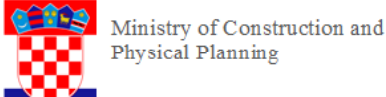
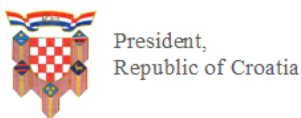
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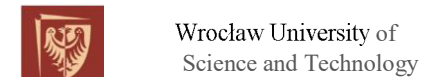
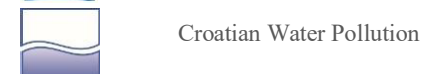
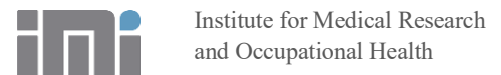
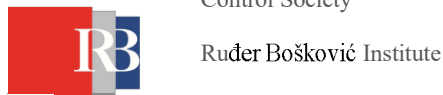
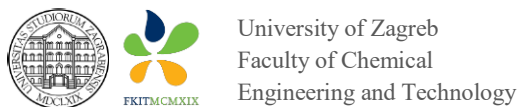
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**10<sup>th</sup> Eastern European Young  
Water Professionals  
Conference**



**New Technologies in Water Sector**

7-12 May 2018, Zagreb, Croatia

**BOOK of ABSTRACTS**



**University of Zagreb,  
Zagreb 2018**

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**ISBN: 978-953-8168-23-9**

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

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### INTRODUCTION

Keşan District is located in the southern half of Edirne City in Thrace Region of Turkey. Its surface area is 1,087 km<sup>2</sup> and it is the second district of Edirne City in terms of area size. The major streams are the Muzali and Doğanca creeks and the district has a natural lake (Büyük Tuzla Lake). There are also eight ponds and a reservoir (Kadiköy Dam Lake) in the district. The district is half- wet in terms of precipitation and autumn and winter are most rainy seasons for the region. The county economy is predominantly agriculture and animal husbandry. The total area of the province is 108,699 hectares. 52,885 hectares of this area are agricultural land, 43,000 hectares are forest land and 11,519 hectares are meadow-pasture land. The non-agricultural area is 1,295 hectares (T.C. KÜLTÜR VE TURİZM BAKANLIĞI, 2017; T.C. KEŞAN 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 Keşan District has a critical importance for human health (Tokatli, 2014).

The aim of this study was to evaluate the drinking water quality of Keşan 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 15 selected villages located in the Keşan 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 Keşan 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), Keşan District has I. Class water quality in terms of pH parameter; I. – II. Class water quality in terms of cyanide, nitrite, nitrate and total dissolved solids parameters; and II. – III. Class water quality in terms of phosphate, electrical conductivity, dissolved oxygen and oxygen saturation parameters (Uslu & 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> (Very Clean)	>8	>90	6.5-8.5	400	500	-	-	5	0.01	0.02	0.01
	<b>II. Class</b> (Less Polluted)	6	70	6.5-8.5	1000	1500	-	-	10	0.06	0.16	0.05
	<b>III. Class</b> (Much Polluted)	3	40	6.0-9.0	3000	5000	-	-	20	0.12	0.65	0.1
	<b>IV. Class</b> (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 Keşan District</b>	<b>Min</b>	4.270	48.200	7.130	615.000	320.000	0.320	0.310	0.000	0.000	0.000	0.000
	<b>Max</b>	8.820	98.900	7.780	1568.000	839.000	0.850	7.330	5.500	0.025	0.440	0.032
	<b>Mean</b>	<b>7.567</b>	<b>85.373</b>	<b>7.411</b>	<b>1020.533</b>	<b>540.667</b>	<b>0.540</b>	<b>1.067</b>	<b>2.533</b>	<b>0.010</b>	<b>0.106</b>	<b>0.013</b>
	<b>SD</b>	1.242	13.991	0.213	299.922	164.366	0.166	1.806	1.827	0.009	0.122	0.012

<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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