

# 31<sup>ST</sup> SEGH 2015

INTERNATIONAL CONFERENCE OF  
THE SOCIETY FOR ENVIRONMENTAL  
GEOCHEMISTRY AND HEALTH



BOOK OF ABSTRACTS

# **31<sup>st</sup> SEGH 2015**

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**Bratislava – Slovak Republic**

**June 22-26, 2015**

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## FOREWORD

Dear SEGH Members and the participants of the 31<sup>st</sup> European Conference of the Society for Environmental Geochemistry and Health (SEGH).

First of all, I would like to thank all delegates who have come to Bratislava, and especially to those who have supported their participation with a presentation, either as a lecture or poster.

Our association – SEGH – brings together experts from two seemingly very different scientific disciplines, geology and medicine, especially public health. Both of these disciplines join mainly the environmental geologists, geochemists, doctors, hygienists, epidemiologists and toxicologists, who preferably examine the impact of the geological environment, mainly contaminated geological components (groundwater, soils, etc.), on the human health.

We believe that the Society for Environmental Geochemistry and Health, the State Geological Institute of Dionýz Štúr and the project team of the GEOHEALTH project have prepared a high quality professional programme and appropriate conditions for the exchange of expert knowledge and scientific experience among the conference participants.

I would like to express my thanks to all authors of the contributions, reviewers and all others, who contributed to the 31<sup>st</sup> SEGH conference scientific programme.

Finally, I hope that you enjoy your stay in Bratislava. I wish you a pleasant and fruitful conference.

Stanislav Rapant

(Chairman)

## **Assessment of Metal Accumulation and Ecological risk in Marmara Ereğlisi shelf northern Marmara Sea, Turkey**

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The Marmara Ereğlisi is located on the north coast of the Marmara Sea and has been affected by domestic, industrial and agricultural pollution. The study of coastal sediments provides useful information in marine, environmental and geochemical research about marine pollution history. The aim of this study is to contribute to the ecological conditions of Marmara Ereğlisi in terms sediment quality, pollution history and eco-toxicological risk using sediment quality guidelines (SQGs, Effect Range-Low ERL and Effect Range-Medium ERM) values and enrichment factors (EFs). For this purpose, 3 sediment core samples were collected and investigated by analysing grain size and potential harmful element (Al, As, Cr, Cu, Hg, Ni, Pb, V and Zn) content. Sediment samples were analysed for metals using ICP-MS after a total digestion. We used SQGs and EF for assessment of the sediment quality and ecotoxicological risk. For EF calculations, average values of each element for the unpolluted part of the cores below 30 cm are used as the background values. Grain size distributions of core sediments were analysed using laser granulometry.

The core sediments contain sand, silt and clay size fractions with the average values of 17%, 36% and 47%, respectively. The average concentrations of metals measured in mg kg<sup>-1</sup> were; 20,304 for Al, 5 for As, 65 for Cr, 10 for Cu, 0.15 for Hg, 41 for Ni, 20 for Pb, 41 for V and 49 for Zn. The results of EF reveal that the upper part of core sediments were not polluted for As, Cr, Cu, Ni and V, moderately polluted in Pb and Zn and highly polluted in Hg. The largest pollution values for Hg, Pb and Zn were found in the upper part of cores with a decrease toward the bottom. These results show the increasing effect of extensive and diversified agricultural and domestic wastes in recent times. The metal concentrations of Cu, Pb, and Zn were below ERL, suggesting minimal toxicological effect on benthic organisms, whereas some sediment samples having values between ERL and ERM for As (2.5%), Cr (14%), Hg (21%) and Ni (95%) present a some toxicological risk for benthic life.