



Book of Abstracts

ISEH 2016, ISEG 2016 & Geoinformatics 2016

ISEH 2016: The 3rd International Symposium on Environment and Health

ISEG 2016: The 10th International Symposium on Environmental Geochemistry

Geoinformatics 2016: The 24th International Conference on Geoinformatics

National University of Ireland, Galway.

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Conference Secretariat

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Welcome Message

On behalf of the Steering and Organizing Committee of the joint international Conference of ISEH 2016, ISEG 2016 & Geoinformatics 2016 on Environment, Health, GIS and Agriculture, I would like to extend my warmest welcome to all delegates from all over the world.

The joint international conference provides a historical opportunity for international experts working in several closely related areas of environment, health, geographical information system (GIS) and agriculture, to meet and share the latest understanding of the ever growing challenges between human and our changing environment. As a joint conference, delegates are allowed and encouraged to attend any sessions of the conferences and to extend their academic networks. This approach of conference organisation maintains the traditional identities of ISEH, ISEG and Geoinformatics conference series while provides a new opportunity of networking for all delegates.

The themes of the conference include the most challenging issues that human beings are currently facing. With the economic development and improvement of our quality of life, the environment around us is under pressure, and often deteriorated. The themes cover a wide range of topics within the environment, health, GIS and Agriculture spheres, with all the details in the Book of Programme.

To complement the academic programme of the conference, we have also organized two conference field trips to the Burren and Cliffs of Moher, Connemara and the Aran Islands as well as a number of unforgettable social events.

Galway is a popular tourist destination, attracting more than 1 million international visitors annually. Conference delegates and their accompanying persons will undoubtedly make significant contribution to the local economy.

I hope Galway will provide you a good experience with its well preserved Irish tradition, hospitality and natural beauty. Thank you and have a nice time in Galway!

Dr. Chaosheng Zhang 张朝生
Chair
ISEH 2016, ISEG 2016 & Geoinformatics 2016

Conference Committee

ISEH 2016 & ISEG 2016

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CHEMICAL COMPOSITION OF GROUNDWATER/DRINKING WATER AND ONCOLOGICAL DISEASE MORTALITY, SLOVAK REPUBLIC

Tuesday, 16th August - 10:00 - OS-4A.01 - Environmental Health - Oral

Mrs. Veronika Cveckova¹, Dr. Katarina Fajcikova¹, Prof. Beata Stehlikova², Dr. Stanislav Rapant¹

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This study deals with relationship between chemical composition of the groundwater / drinking water and mortality from oncological diseases (MOD) in Slovakia. Primary data consist of the Slovak national database of groundwater analyses (20,339 chemical analyses, 34 chemical elements/compounds) and data on MOD (17 health indicators collected within 1994-2003). The chemical and health data were unified in the same form and expressed as the mean values for each of 2,883 Slovak municipalities. Pearson and Spearman correlation as well as artificial neural network were used for statistical data analysis to identify the most significant chemical elements having influence on MOD and their limit and optimal contents. Based on calculations through neural network, eight chemical elements/parameters in the groundwater were defined as the most significant for MOD: Ca+Mg (mmol l-1), Ca, Mg, TDS, Cl, HCO₃, SO₄ and NO₃.

The highest relationship between MOD and groundwater contents was documented for Ca+Mg (mmol l-1), Ca and Mg. We observe increased MOD with their low (deficit) contents in groundwater/drinking water. The limit values were set for Ca+Mg 1.73-5.85 mmol l-1, Ca 60.5-196.8 mg l-1 and Mg 25.6-35.8 mg l-1. At these concentration ranges MOD in the Slovak Republic is at the lowest levels. These limits are about twice higher in comparison with the current Slovak guideline values for the drinking water.

This research has been performed within the project Geohealth (LIFE10 ENV/SK/086) which is financially supported by the EU's funding instrument for the environment: Life+ programme and Ministry of the Environment of the Slovak Republic.

CHEMICAL COMPOSITION OF GROUNDWATER/DRINKING WATER AND HEALTH STATUS OF POPULATION OF THE SLOVAK REPUBLIC

Tuesday, 16th August - 10:00 - OS-4A.02 - Environmental Health - Oral

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Presented study deals with relationship between chemical composition of groundwater/drinking water and health status of inhabitants of the Slovak Republic. Primary datasets consist of national database of chemical analysis of groundwater (20,339 analyses, 34 chemical elements/compounds) and data on health status of population. Health status is evaluated through 14 health indicators, including the most common causes of deaths in Slovakia, cardiovascular and oncological diseases, diseases of gastrointestinal tract and respiratory system as well as life expectancy and potential years of lost life. Pearson and Spearman correlation and method of neural networks were used for analysis of relationship between chemical composition of groundwater and health indicators. Following chemical elements were identified as most influential in relation to human health: water hardness, Ca, Mg, T.D.S., HCO₃⁻, NO₃⁻ and SO₄²⁻. The most significant relationship between health indicators and chemical elements in groundwater was documented for water hardness, calcium and magnesium. At deficit levels of these elements we observe significantly worse levels of health indicators as well as lower life expectancy. We have defined following limit values: Ca > 60 mg l⁻¹, Mg > 25 mg l⁻¹ and water hardness >2 mmol l⁻¹, at which mortality for evaluated diseases is the lowest and life expectancy is the highest. Defined limit contents are two times higher compared to Slovak guideline for drinking water.

The project is supported by the EU Life+ programme (LIFE10 ENV/SK/086) and Ministry of the Environment of the Slovak Republic.