Water Treatment Technologies for the Removal of High-Toxicity Pollutants
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Water Treatment Technologies for the Removal of High-Toxicity Pollutants

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PREFACE

Water is essential for life, a strategic resource for every country and population. Its availability and sanitary safety is highly connected with the health and economy status of population. Burden of disease due to polluted water is a major public health problem throughout the world. Many pollutants in water streams have been identified as toxic and harmful to the environment and human health, and among them arsenic, mercury and cadmium are considered as high priority ones.

Providing population with safe drinking water became the priority and at the same time a big challenge for the modern society. Many funding agencies in various countries have assigned a high priority to the environmental security and pollution prevention. UN, being one of them, launched the “International Decade for Action: Water for life 2005–2015.” Therefore, today’s political and social climate presents an important opportunity to implement principles of sustainable development and to preserve resources essential for future life. This process requires interdisciplinary approach; it is critically important to stimulate interactions between medical doctors, chemists, physicist, materials scientists, engineers and policy makers, which are already experienced in their specific areas. It is also our ethical obligation to preserve existing water resources and existing eco systems enhancing their biodiversity.

The NATO Advanced Research Workshop “Water Treatment Technologies for the Removal of High-Toxicity Pollutants” took place on September 13–17, 2008 in Košice, Slovak Republic. Slovak Republic is a country located in Central Europe, surrounded by Czech Republic, Poland, Ukraine, Hungary and Austria. Košice is the country’s second largest city; is a hub of industry, commerce, science and culture of East Slovakia. Institute of Geotechnics, Slovak Academy of Sciences and School of Public Health “A. Stampar”, Medical School, University of Zagreb were co-organizing institutions.

Forty-two participants from 14 countries including Croatia, Belgium, Bulgaria, Belarus, Greece, Italy, Moldova, Portugal, Russia, Serbia, Slovakia, Turkey, Ukraine and the USA attended the meeting. Sixteen invited speakers and 26 specialists including young scientists and post-graduate students, discussed the problems related to high toxicity pollutants (i.e. As. Hg, Cd, etc.) in environment, especially in drinking waters. They also referred to the latest technological innovations in the treatment of
water streams, including speciation and modeling, needed to secure the city’s water supply. Policy making, as a mean to increase environmental security was also discussed.

The Advanced Research Workshop was divided in sessions covering latest views of the underlying nature of toxic species in waters, fundamental principles of treatment technologies, modelling and policy making. Four sessions were defined as (a) arsenic and other high priority pollutants in waters, chemistry and toxicity, (b) health effect and environmental security, (c) treatment, modelling, and (d) policy making in the areas of health protection, treatment selection, protection of resources and crisis response.

The above-described topics are covered in the book. Formal presentations are included in the book along with the most interesting and valuable young scientist’s and postgraduate student’s works presented as posters at the workshop. It is unfortunate that a book can not reflect the passionate exchange of ideas that happened during discussions and informal meetings. It is our believe that this book will be a valuable source of information to the scientific community that deals with water aspects and a helpful guide for policy makers and public health specialists.

We would like to point out that this meeting was a continuation of a series of meetings of CCMS Pilot Study on “Clean Products and Processes” group and resulted in the strengthening of an existing network of scientists and specialists from NATO, Partner and Mediterranean Dialogue Countries. We are proud that new scientists joined this network and created new collaborative links and personal friendships. This added value is always beyond scientific borders.

Such a constructive ARW is the outcome of efforts by participants, lecturers and co-directors. This meeting would not be possible and successful without volunteers from the Institute of Geotechnics of SAS, Kosice, who handled everyday logistics with utmost consideration and efficiency. We would also like to express our sincere gratitude to the NATO Science for Peace and Security (SPS) Programme, its Programme Director of Environmental Security Dr. F. Pedrazzini and his Assistant Ms. L. Campbell-Nolan for encouragement, expertise, and financial support. Special thanks should be addressed to Mr. Wil Bruins from NATO Publishing Unit of the Springer Academic Publisher, who has provided us with much appreciated assistance, valuable guidance and patience. The co-directors together with international organizing committee hopefully anticipate that this ARW provides continued success for all participants as they extend collaboration in their field of interest.

The Editors