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Second International Conference on Radiation and Dosimetry in Various Fields of Research

CEI CENTRAL EUROPEAN INITIATIVE

www.rad2014.elfak.rs

May 27 - 30, 2014 | Faculty of Electronic Engineering | Niš | Serbia

BOOK OF ABSTRACTS

Second International Conference on Radiation and Dosimetry in Various Fields of Research

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PUBLISHER: University of Niš, Faculty of Electronic Engineering
P.O.Box 73, 18000 Niš, Serbia
www.elfak.ni.ac.rs

FOR THE PUBLISHER: Prof. Dr. Dragan Tasić

EDITOR: Prof. Dr. Goran Ristić

COVER DESIGN: Vladan Nikolić, M.Sc.

TECHNICAL EDITING: Sasa Trenčić and Vladan Nikolić

PROOF-READING: Saša Trenčić, MA

PRINTED BY: Nais Print, Niš

PRINT RUN: 350 copies

ISBN 978-86-6125-100-9

The Second International Conference on Radiation and Dosymetry in Various Fields of Research (RAD 2014) and *the Second East European Radon Symposium (SEERAS)* were financially supported by:

- Central European Initiative (CEI)
- International Union of Pure and Applied Physics (IUPAP)*
- Ministry of Education, Science and Technological Development

*To secure IUPAP sponsorship, the organisers have provided assurance that RAD 2014 Conference will be conducted in accordance with IUPAP principles as stated in the IUPAP resolution passed by the General Assembly in 2008. In particular, no bona fide scientist will be excluded from participation on the grounds of national origin, nationality, or political considerations unrelated to science.

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

539.16(048)

INTERNATIONAL Conference on Radiation and Dosimetry in Various Fields of Research (2nd ; 2014 ; Niš)
Book of Abstracts / The Second International Conference on Radiation and Dosimetry in Various Fields of Research, RAD 2014, May 27-30, 2014, Niš, Serbia ; [editor Goran Ristić]. - Niš : Faculty of Electronic Engineering, 2014 (Niš : Nais Print). - 450 str. ; 30 cm

Nasl. str. prištampanog teksta: Book of Abstracts / Second East European Radon Symposium SEERAS, May 27-30, 2014, Niš, Serbia. - Oba rada štampana u međusobno obrnutim smerovima. - Tiraž 350. - Bibliografija uz pojedine apstrakte.

ISBN 978-86-6125-100-9

a) Јонизујуће зрачење - Дозиметрија - Апстракти
COBISS.SR-ID 207273996

RAD

EXAMINATION OF THE HAZARDOUS AND HARMFUL SUBSTANCES CONTENT IN THE WATER USED FOR IRRIGATION OF AGRICULTURAL SOIL IN THE BASIN OF RIVER TIMOK

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The paper presents the results of the presence of hazardous and harmful substances content in the water for irrigation, sampled during the vegetation season 2012/2013 in the basin of the river Timok, from Knjaževac to Visočni hill (Mokranja). The investigation was carried out in three cycles of monitoring at 17 selected sites, which gravitate on the agricultural soil that was irrigated.

The content of the following trace elements and heavy metals was determined: Cr, Ni, Pb, Cu, Zn, Cd, B, As, Fe, Hg.

The obtained results imposed that the contents of trace elements and heavy metals in the study water samples were, generally, below the recommended limits. In one sample, during the first cycle of sampling, was recorded increased copper content, exceeding the recommended limits (0.2509 mg l^{-1}). As nearby the sampling location there is a village, whose wastewaters gravitate to the sampling point, it is possible that the reason for the increased concentration of this metal is the use of copper-based products. During the other cycles on that location there is not registered higher content of this element above the recommended limits.

One water sample from the Timok river, sampled in the second cycle of monitoring, showed a slight increase in the nickel content above the recommended limits (0.124 mg l^{-1}). Since the location of this sample is also in the zone under the village, the assumption is that the increase in the content of the tested element was caused by an anthropogenic activity, as in other sampling cycles increased nickel content was not registered.

Based on the obtained data on the content of hazardous and harmful substances in the water for irrigation of the Timok River, it can be concluded that the water studied is usable for irrigation of agricultural crops and soils, but along with restrictions and frequent quality checks during the summer months.

Key words: Trace elements, heavy metals, irrigation water, soil