9th Conference of the Society of Physicists of Macedonia

BOOK OF ABSTRACTS

20 - 23 September 2012
Ohrid, Macedonia

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EVALUATION OF POPULATION DOSES IN STATISTICAL REGIONS OF MACEDONIA RESULTING FROM THE NATURAL RADIOACTIVITY IN THE SOIL

Zdenka Stojanovska[1], Zora S. Zunic[2], Mimoza Ristova[3]

[1]Faculty of Medical Sciences, Goce Delcev University, Stip, Republic of Macedonia

[2]Institute of Nuclear Sciences "Vinca", University of Belgrade, Serbia

[3]Institute of Physics, Faculty of Natural Sciences and Mathematic, University in Skopje, Republic of Macedonia

Terrestrial radiation from naturally occurring radionuclides, such as ^{40}K, radionuclides from the ^{238}U and ^{232}Th series and their decay products is the main external source of public exposure. This research presents the results of assessment the population doses from natural radionuclides in soils at the eight statistical regions of the Republic of Macedonia. The surface soil samples (from 0 to 20 cm depth) were collected during the period 2007-2010 from 213 locations of the entire country territory. High-resolution gamma spectroscopy was employed the qualitative and quantitative analysis. The obtained specific activity of ^{40}K, ^{226}Ra, ^{232}Th and associated external dose resulting from the gamma-radiation were different in the soil of each region depending of the geological and geographical conditions. The results showed that the obtained values for gamma absorbed dose rate in air varied from 50 nGy h^{-1} in Skopje to 86 nGy h^{-1} in Pelagonija. The arithmetic and geometric mean values of the annual effective dose equivalent for the Republic of Macedonia were found to be: 83 μSv y^{-1} (SD=29) and 79 μSv y^{-1} (GSD=1.4), respectively.