

عنوان مقاله:

Natural Radioactivity Level of ^{226}Ra , ^{232}Th , and ^{40}K Radionuclides in Drinking Water of Residential Areas in Kermanshah Province, Iran using Gamma Spectroscopy

محل انتشار:

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خلاصه مقاله:

Introduction: Human has always been exposed to background ionizing radiation. Interaction between ionizing radiation and the biological system can lead to changes in cells or tissues inducing diseases, such as cancer. With this background in mind, this experimental study aimed to evaluate the specific activity of water radionuclides in Kermanshah province, western region of Iran. Material and Methods: The specific activities of ^{226}Ra , ^{232}Th , and ^{40}K radionuclides in drinking water were assessed by gamma-ray spectrometer with high-purity Germanium detector. The water samples were collected from different towns (14 sites) in Kermanshah province on winter and summer seasons. Results: The mean specific activity levels of ^{226}Ra , ^{232}Th , and ^{40}K radionuclides in Bq/l were 0.53 ± 0.28 , 1.07 ± 0.43 , and 7.17 ± 5.37 in winter, respectively. In addition, during summer the mean specific activities of ^{226}Ra , ^{232}Th , and ^{40}K were 0.61 ± 0.20 , 0.76 ± 0.36 , and 5.67 ± 3.7 Bq/l, respectively. Contributions of the consumed water samples to annual effective dose for these radionuclides in adults was calculated to be in the range of 0.0015 - 0.24 mSv/y with the mean of 0.15 mSv/y. Conclusion: Findings of the present study demonstrate that the radioactivity level in drinking water due to ^{226}Ra , ^{232}Th , and ^{40}K radionuclides in Kermanshah province is lower than the guidance levels recommended by the World Health Organization report (WHO-2011). Moreover, the mean annual effective dose caused by these radionuclides in Kermanshah province is lower than the global average level (0.29 mSv/y) reported by United Nations (Scientific Committee on the Effects of Atomic Radiation (UNSCEAR 2000).

کلمات کلیدی:

Drinking Water Gamma Spectroscopy Iran, Kermanshah Natural Radioactivity

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