

^{226}Ra and Natural Uranium in Bulgarian Mineral Waters

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Abstract

In this study concentration levels of ^{226}Ra and natural uranium in mineral waters from Bulgaria were analyzed using nuclear and analytical methods.

^{226}Ra is a naturally occurring radioisotope with a period of half live equal to 1 600 years, which specific activity in water was determined through analysis of the daughter ^{222}Rn . The measurements were carried out by using a low-level liquid scintillation counting in a Packard Tri-Carb 2770 TR/SL liquid scintillation spectrometer. Natural uranium was determined with a luminescent method based on the ability of six-valent Uranium melted with sodium fluoride to produce light under UV illumination.

The concentration values obtained were compared with concentrations reported by other authors in different countries and with reference values accepted for drinking water. The annual effective doses were calculated for all investigated waters for adult inhabitants assuming the consumption of 2 liter of water per day.

Key Words: ^{226}Ra , natural uranium, mineral water, liquid scintillation counting

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