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Natural Radioactivity in Tunisian Bottled Mineral Waters

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Abstract : Radium isotopes (226Ra, 228Ra) and uranium isotopes (234U, 238U) activity concentrations were determined in most popular Tunisian bottled mineral waters samples. Activity concentrations of uranium were studied by radiochemical separation procedures followed by alpha spectrometry and that of radium isotopes by gamma-ray spectrometry. The activity concentrations of 238U, 234U, 226Ra and 228Ra in water samples varied in range 3.3 - 22.5 mBq.L−1, 4.0 - 34.2 mBq L−1, 2.0 - 67.0 mBq L−1 and 2.0 - 30.2 mBq L−1, respectively. These values are comparable with those reported for many other countries in the world for different types of water. Based on the activity concentration results obtained in this study, the estimated annual ingestion dose rates for three different age groups (babies, children and adults) due to the ingestion of radium and uranium isotopes through drinking water are lower than the limit of intake prescribed by WHO. The annual doses exceed the recommended value of 0.1 mSv y-1 in one case for babies.

Keywords : mineral water, natural radioactivity, radiation dose, radium, uranium
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