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Measurement of Specific Activity of Natural (^{40}K, ^{226}Ra and ^{232}Th) and Anthropogenic (^{137}Cs) Radionuclides in Bottled Drinking Water in Phuket Province (Thailand) Using Gamma Ray Spectrometry Technique

Wednesday, May 20, 2015 2:00 PM (3h 30m)

This research aims to study the specific activity of natural (^{40}K, ^{226}Ra and ^{232}Th) and anthropogenic (^{137}Cs) radionuclides in bottled drinking water from different manufacturers in local stores located in Phuket province, Thailand. Totally 30 samples of bottled drinking water (5 liters) were randomly collected and prepared. All of water samples were boiled at 100 oC and evaporated into 1 liter. Specific activity of natural and anthropogenic radionuclides in all prepared water samples were measured and determined using a low background high-purity germanium (HPGe) detector and gamma ray spectrometry analysis system. The gamma ray radioactive standard sources from Office of Atoms for Peace (OAP) which is SH-424, were also used to analyze and compute all of specific activities of ^{40}K, ^{226}Ra, ^{232}Th and ^{137}Cs. The measuring time of each sample is 21,600 seconds. It was found that specific activities of ^{40}K, ^{226}Ra, ^{232}Th and ^{137}Cs ranged from < 0.20 - 0.41 Bq/L, 0.37 - 2.11 Bq/L, < 0.11 - 1.30 Bq/L and < 0.27 - 1.82 Bq/L with mean values of 0.24 ± 0.09 Bq/L , 1.13 ± 0.2 Bq/L, 0.61 ± 0.21 Bq/L and 1.09 ± 0.36 Bq/L, respectively. Moreover, the experimental results were also compared with Office of Atoms for Peace (OAP) research data and some acceptable values proposed by UNSCEAR.

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