

Chonticha Phaophang 2013: Radioactivity Levels in Marine Sediment Collected in Chonburi Province. Master of Science (Applied Radiation and Isotopes), Major Field: Applied Radiation and Isotopes, Department of Applied Radiation and Isotopes. Thesis Advisor: Assistant Professor Wanwisa Sudprasert, Ph.D. 103 pages.

This research aimed to measure radioactivity levels in marine sediment collected in some areas of Chonburi Province and compared with typical values of those in soil reported by UNSCEAR. Sediment samples were collected from 10 sites along the seashore of Sriracha, Chonburi province during the rainy, winter, and summer season. Radioactivity were analysed using gamma spectrometry with a high purity germanium detector (HPGe) using IAEA Soil-6 as a reference material. The samples were counted for 60,000–80,000 seconds. The artificial radionuclide ^{137}Cs was not found in this study. The detected radionuclides were related to the naturally occurring isotopes ^{238}U , ^{232}Th and ^{40}K . The average specific activities were found to be 44 ± 10 Bq/kg of ^{238}U , 59 ± 17 Bq/kg of ^{232}Th and 463 ± 94 Bq/kg of ^{40}K in rainy; 41 ± 6 Bq/kg of ^{238}U , 50 ± 9 Bq/kg of ^{232}Th and 484 ± 83 Bq/kg of ^{40}K in winter; and 39 ± 6 Bq/kg of ^{238}U , 41 ± 7 Bq/kg of ^{232}Th and 472 ± 81 Bq/kg of ^{40}K in summer, which were higher than the UNSCEAR's reported values of 35, 30, and 400 Bq/kg for ^{238}U , ^{232}Th and ^{40}K respectively. However the values of hazard index of natural radionuclides in sediment samples were found to be normal. In addition, the statistical analysis using ANOVA of radionuclide activities among season found that ^{238}U and ^{232}Th were not significantly different ($p > 0.05$), whereas ^{40}K was significantly different ($p < 0.05$). Other factors including particle size and amount of organic matter in sediment were found to be relative with the radioactivity level found in sediment, whereas the amount of heavy metal and kind of benthos were not related to the detected radionuclides.

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