Radiological risks related to natural radionuclide in Selected fish from east coast of peninsular, Malaysia

ABSTRACT

Systematic investigations are essential in establishing the current water quality because numerous industrial and anthropogenic sources are responsible for polluting the ecosystem along Peninsular Malaysia's east coast. Since aquatic stocks play a significant role in the daily diets of the surrounding populations, the present study used the ICP-MS technique to measure the levels of three natural radionuclides 232Th, 238U and 40K in three fish species collected from three locations along the east coast of Peninsular Malaysia. The activity concentration ranges from 23.13 ± 1.70 to 43.31 ± 2.10 Bq kg-1for 40K, 0.06 ± 0.01 to 0.33 ± 0.05 Bq kg-1 for 232Th and 0.11 ± 0.08 to 0.48 ± 0.10 Bq kg-1 for 238U. The determined activity concentration of radionuclides was used to estimate the annual effective dose and cancer risk. The findings showed that the predicted yearly effective doses (μSv year-1) for 232Th, 238U and 40K were 1.67, 0.70, and 11.92 correspondingly, which were much lower than the UNSCEAR recommendation and considered to be safe. Based on the estimated annual effective dose and a life expectancy of 70 years, the cancer risk factor for adults is predicted to be 3.00 × 10-5. Compared to the UNSCEAR cancer risk factor of 8.4 × 10-3 and ICRP cancer risk factor of 3.5 × 10-3, this value is much lower. According to the current study, the dose that locals consume from eating fish is safe for human consumption, relatively minimal, and does not impair human health.