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A study of natural radioactivity levels in beach sand collected from Uswatakeiyawa to Chilaw

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High radiation background levels have been reported in certain areas in Sri Lanka. Pulmudei in the East Coast, Beruwala in the South West Coast and Uswatakeiyawa in the West Coast are some examples. The measured background radiation levels in these areas are high due to the presence of thorium rich monazite in the beach sand. However a systematic study to measure the activity levels in beach sand in these areas has still not been carried out. Such a study is important with respect to estimating the radiation exposure to the public and also in locating previously unidentified mineral sand deposits.

The activity concentrations of ^{238}U, ^{232}Th and ^{40}K in 49 sand samples collected from a 72 km coastal stretch from Uswatakeiyawa to Chilaw have been determined using gamma ray spectrometry. The measured activity concentration of ^{238}U, ^{232}Th and ^{40}K range from 05 to 1207, 04 to 5997 and 38 to 2048 Bq kg^{-1} respectively. The detection limits for the activity concentrations of ^{238}U, ^{232}Th and ^{40}K for the geometry used were 1.70, 2.37 and 10.41 Bq. kg^{-1} respectively. A good correlation between the measured activity concentration of ^{238}U and ^{232}Th could also be seen.

The highest activity level of both ^{238}U and ^{232}Th was found in a sand sample collected from a location in Kapumgoda which is situated about 16 km north of Uswatakeiyawa. The radiation level measured at Kapumgoda was 3.2 μ Sv h^{-1} which is more than 10 times the normal background.

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