504/E1

Gamma ray dose rate survey in the coastal strip from Crow Island to Beruwala

A P Withanage* and P Mahawatte

Department of Nuclear Science, University of Colombo, Colombo 03.

The coastal strip from Crow Island to Beruwala plays a major role in the Sri Lankan economy due to the tourism and fishery industries. The area is highly populated and is known to have locations with very high background radiation levels. The high radiation levels in the area are due to the occurrence of thorium rich monazite in beach sand. In this study, an attempt was made to determine the radiation levels along the coastal line from Crow Island to Beruwala in a systematic way. Beach sand was collected at 1 km intervals along the coast starting from Beruwala. The activity concentration of ^{238}U, ^{232}Th and ^{40}K in the sand were measured using high resolution gamma ray spectrometry. From the activity concentrations, gamma dose rate at a m above ground was calculated.

The maximum activity concentrations of ^{238}U, ^{232}Th and ^{40}K in the beach sand were 3100 ± 200 Bq/kg, 19600 ± 600 Bq/kg and 1200 ± 200 Bq/kg respectively. The minimum values were below detection limits. The detection limits of the ^{238}U, ^{232}Th and ^{40}K were 3, 5 and 10 Bq/kg respectively. The dose rates changed from 0.003 µSv/h to 9.57 µSv/h with an average of 1.12 µSv/h. The highest effective gamma dose rate was obtained from a location at Egoda Uyana, Modara. This value is comparable to the values measured in other high radiation background areas in the world. In 60 % of the sampling locations, the annual effective gamma dose rate exceeded the world average value of 2.4 mSv/year.

apwithangage@gmail.com Tel: 0775346284