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### **Radioactivity of sand in the coastal strip from Beruwala to Dondra, Sri Lanka**

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All living beings on earth are continuously exposed to radiation from primordial radio nuclides  $^{232}\text{Th}$ ,  $^{238}\text{U}$  and  $^{40}\text{K}$  present in soils and sands. Due to their long half lives these radionuclide remain in soils and sands for long periods of time contributing to the natural background radiation.

This study was carried out as a part of the island wide survey to measure the radioactivity levels in beaches around the country. The stretch covered in this study was from Beruwala to Dondra. A sand sample at each 1 km interval from Beruwala to Dondra was collected and activity concentrations of  $^{232}\text{Th}$ ,  $^{238}\text{U}$  and  $^{40}\text{K}$  were measured using gamma ray spectrometry. Based on the activity concentrations, the annual effective dose rates were calculated. At each sampling location the radiation dose rate at 1 m above ground was also measured using a portable survey meter.

The activity concentrations of sand ranged from 6 – 17058 Bq kg<sup>-1</sup> for  $^{232}\text{Th}$ , 3 – 3584 Bq kg<sup>-1</sup> for  $^{238}\text{U}$  and 3 – 1063 Bq kg<sup>-1</sup> for  $^{40}\text{K}$ . Measured gamma dose rates of the sampling locations varied from < 0.01 to 8.61  $\mu\text{Sv h}^{-1}$ . Annual effective gamma dose rates calculated ranged from 0.01 to 75.38 mSv y<sup>-1</sup>. The maximum activity concentrations of all three radionuclide and the dose rate were measured at Dondra.

Keywords: Background radiation, beach sand, gamma dose rate, activity concentration, gamma ray spectrometry