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Background radiation levels along Hambantota to Dondra coastline, Sri Lanka

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Absorbed dose rates at 38 locations along the coastline from Hambantota to Dondra, at 1 m above ground were measured using a portable digital survey meter. The values ranged from <0.01 to 3.66 μSv h^{-1}.

The measured values were compared with the dose rates calculated using the activity concentrations of ^{232}Th, ^{226}Ra and ^{40}K in sand collected from each location and measured in the laboratory using a HPGe detector. Calculated values ranged from 0.005 to 5.527 μSv h^{-1}. A good correlation was obtained between the calculated and the measured values. However the calculated values were somewhat higher than the measured values. The calculated annual effective dose ranged from 0.01 to 9.68 mSv with an average of 0.43 mSv. In 3% of the locations, the annual effective dose was greater than the worldwide average annual effective dose of 2.4 mSv. The highest background radiation level was recorded in 'Nilwella' (5°57'54.8"N 80°43'03.3"E) beach which is a newly identified location with high radiation background.

This research is a part of an ongoing study to measure radiation levels along the entire coastline of Sri Lanka.

Keywords: Beach sand, HPGe detector, high background radiation area, annual effective dose, Sri Lanka

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