NORM measurements at Kalloni and Gera Gulfs, Lesvos Island, Greece

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Natural radioactivity measurements were held in the beach sands of the two main gulfs (Gera, Kalloni) of Lesvos Island, Greece. These gulfs host thermal springs and are preferred tourist destinations, during the year. Dose rates and concentrations of natural radioactivity (^{232}Th series, ^{226}Ra and ^{40}K) and ^{137}Cs were measured in-situ and in the laboratory by means of gamma ray spectroscopy. Ten beach sand samples were collected from each gulf. The in-situ measurement and the dose rate determination was achieved via a portable NaI scintillation detector (SpriID). The activity concentration calculations were realized in the laboratory, with the use of a high purity germanium detector, and then they were also used to estimate dose rates. The in-situ measured and estimated dose rates were compared to verify the different approaches. The highest values (activity concentrations and dose rates) were found in the beaches of Kalloni Gulf compared to those of Gera Gulf, which may be attributed to the granulometry.