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Radioactivity levels of ^{40}K, ^{226}Ra, ^{232}Th, ^{210}Pb, ^{137}Cs and ^{134}Cs in marine and coastal sediment in selected locations of Sri Lanka

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Human activity has resulted in varying degrees of contamination of the world's seas and oceans with anthropogenic radionuclides. The radioactive contamination of marine environment with radioisotopes has caused considerable alarm within the scientific community and the general public after the Fukushima Nuclear Power Plant (FNPP) accident in March 2011 in Japan. The objective of this study was to determine whether there was any impact on the marine environment due to the radioactive releases of FNPP accident and to establish the baseline levels of marine radioactivity for Sri Lanka. This study was conducted during Feb 2012 – April 2013 by analyzing surface sediment samples collected from the sea at locations near Mannar, Kalpitiya, Mt. Lavinia, Beruwala, Arugambe, Passekudah and Trincomalee. Radioactivity levels were measured by the high-resolution gamma spectrometry technique at the Atomic Energy Authority. The ranges of existing radioactivities for ^{40}K, ^{226}Ra, ^{232}Th, ^{210}Pb and ^{137}Cs expressed in Bq kg^{1} (dry weight basis) were 95 – 685, 3.0 – 51, 6 – 167, 13 – 182 and 0.34 – 1.0 respectively. The artificial radionuclide ^{134}Cs was not found in detectable levels in any sediment samples confirming that there was no direct impact from the FNPP accident on the marine sediment (The minimum detectable activity-MDA-of the system for ^{134}Cs radionuclide was 0.15 Bq kg^{-1}).

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