Measurement of ^{137}Cs and ^{7}Be in soil

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^{7}Be and ^{137}Cs are two radionuclides present in soil as a result of atmospheric deposition. ^{137}Cs has a half-life of 30.2 years and has been extensively used in soil erosion studies. Although ^{7}Be has a relatively short half-life of 53 days, the potential of using ^{7}Be in estimating erosion rates, associated with short periods of time or individual events has already been recognised.

The objective of this study was to measure the activity concentration of these two isotopes in soil using High Purity Germanium gamma ray spectrometry. Thirty five soil samples from different locations in Sri Lanka have been analysed. Most of these samples (29) were collected from the Western Province while the rest were from remote locations such as Nuwara Eliya, Wasgamuwa, Girithale and Knackles. The gamma counting was done using cylindrical and Marrinelli beaker geometries and the spectra were analysed using the software package ANGES developed by the International Atomic Energy Agency (IAEA). The efficiency calibration of the system for the two geometries was carried out using the IAEA standards of different densities.

The activity concentration of ^{137}Cs ranged from 0.9±0.2 Bq/kg to 32±2 Bq/kg. The maximum activity concentration of ^{7}Be detected was 39±5 Bq/kg while the minimum was less than the detection limit. The detection limit of ^{137}Cs and ^{7}Be was found to be 0.547 Bq/kg and 0.187 Bq/kg respectively.

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