

Simplified Model for In-Situ Survey of Gamma Activity in Soil

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ABSTRACT

The determination of γ -ray activity in soils by *in-situ* spectrometry is highly dependent on the distribution of the radioactivity in the soil. A simplified model for the depth distribution of the contaminant in a localized area has been developed for use in the interpretation of field data taken with a 5-cm by 5-cm NaI detector and portable multichannel analyzer. A uniform distribution disk model is used to describe the behavior of ^{137}Cs in the soil downstream of the production and processing facilities at the Savannah River Site. Experimental measurements of the depth distribution at several remote, undisturbed locations have been made and confirmed by laboratory analyses of core-bore samples. The model predictions, when coupled with the field measurement of ground surface activity, can be used as a screening tool for monitoring radionuclide contamination in the environment.