



Investigation of Depth Distribution of Radionuclides in Soil Contaminated by the Fukushima Dai-ichi Nuclear Power Plant Accident

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This work was conducted as one of the researches relating to distribution maps of radiation dose rate etc. which the government has promoted as one of the counter-measures to the Fukushima Dai-ichi Nuclear Power Plant accident in March 2011, and the 2nd investigation on the depth distribution of radionuclides (RNs) in soil was conducted after about 1 year from the accident, succeeding to the 1st investigation which was conducted after about 3 months from the accident. Soil core samples to about 50cm deep were taken at 11 locations in Nihonmatsucity, Kawamata-town and Namie-town. Sorption-desorption experiments of Cs-137 and I-131, CEC and AEC measurements and mineralogical analyses by XRD were conducted for 3 types of soils (sandy, clayey, organic) and those elutriated components (clay, silt, sand). Radiocaesium (Cs-134 and Cs-137) and Ag-110m were detected at all locations investigated and only at locations where radiation dose rate is high, respectively. Radiocaesium more than 95% and 99% of the inventory distributed within 5cm and 10cm deep in soil in the surface layer (mainly sandy soil), respectively, and distributed within 16cm and 20cm deep in organic soil and soil at locations where are supposed to have been used as farmland, respectively. Radiocaesium tended to extend to deeper parts in soil that organic and clayey soils are the support layer, particularly in organic soil, compared with the 1st investigation. Distribution coefficients of Cs-137 onto organic soil and its elutriated components were also lower than that onto other soils. This is consistent with trend of penetration profile.