



Detailed deposition density maps constructed by large-scale soil sampling for gamma-ray emitting radioactive nuclides from the Fukushima Dai-ichi Nuclear Power Plant accident

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抄録

Soil deposition density maps of gamma-ray emitting radioactive nuclides from the Fukushima Dai-ichi Nuclear Power Plant (NPP) accident were constructed on the basis of results from large-scale soil sampling. In total 10,915 soil samples were collected at 2168 locations. Gamma rays emitted from the samples were measured by Ge detectors and analyzed using a reliable unified method. The determined radioactivity was corrected to that of June 14, 2011 by considering the intrinsic decay constant of each nuclide. Finally the deposition maps were created for Cs-134, Cs-137, I-131 Te-129m and Ag-110m. The radioactivity ratio of Cs-134-Cs-137 was almost constant at 0.91 regardless of the locations of soil sampling. The radioactivity ratios of I-131 and Te-129m-Cs-137 were relatively high in the regions south of the Fukushima NPP site. Effective doses for 50 y after the accident were evaluated for external and inhalation exposures due to the observed radioactive nuclides. The radiation doses from radioactive cesium were found to be much higher than those from the other radioactive nuclides. (C) 2014 The Authors. Published by Elsevier Ltd.

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