

Naturally Occurring Radionuclides and Rare Earth Elements in Weathered Japanese Soil Samples

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A b s t r a c t

The activity concentrations of ²²⁶Ra and ²²⁸Ac in weathered Japanese soils from two selected prefectures have been measured using a γ -ray spectroscopy system with high purity germanium detector. The uranium, thorium, and rare earth elements (REEs) concentrations were determined from the same soil samples using inductively coupled plasma mass spectrometry (ICP-MS). For example, granitic rocks contain higher amounts of U, Th, and light REEs compared to other igneous rocks such as basalt and andesites. Therefore, it is necessary to understand the interaction between REEs and nature of soils since soils are complex heterogeneous mixture of organic and inorganic solids, water, and gases. In this paper, we will discuss about distribution pattern of ²³⁸U and ²³²Th along with REEs in soil samples of weathered acid rock (granite) collected from two prefectures of Japan: Hiroshima and Miyagi.

Key words: uranium, thorium, REEs, ICP-MS, γ -spectroscopy, weathered rocks.