

International Conference on the Management of Naturally Occurring Radioactive Materials (NORM) in Industry

VIRTUAL EVENT

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Natural radioactivity survey on the soil as a potential area of rare earth elements in Ranong province, Thailand

Natural radioactivity in soil samples collected from Ranong province to estimate the potential resource of rare earth elements in Thailand has been investigated. ^{238}U , ^{232}Th , and ^{40}K were measured using gamma-ray spectroscopy with a p-type HPGe coaxial detector. The mean activity concentrations of ^{238}U , ^{232}Th and ^{40}K in the soil samples of study area ranged from 34.9-208.8, 6.83-195.23 and 72.23-788.83 Bq kg⁻¹, respectively. The radium equivalent (Raeq) values for all samples were found to be less than the maximum permissible limit in value of 370 Bq kg⁻¹. The average values of absorbed dose rate (D) in Kapoe District, Hat Som Paen and Bang Non areas were observed to be 101.24, 99.45 and 61.18 nGy h⁻¹, respectively. The mean annual effective dose rate were 124.16, 121.97 and 75.03 mSv y⁻¹ which is about 77, 74 and 7% that higher than the world average. The calculated values of the external hazard index obtained in these studies were less than the world average value of 1. The results indicated that there is no considerable health risk caused by natural radioactivity in the soil in these study areas. All data will be shared with Office of Atoms for Peace for providing regulation and management of Natural occurring radioactive material (NORM) in Thailand.

Keywords: Natural Radioactivity; Gamma-Ray Spectroscopy; Uranium; Thorium; Soil

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