

Accepted Manuscript

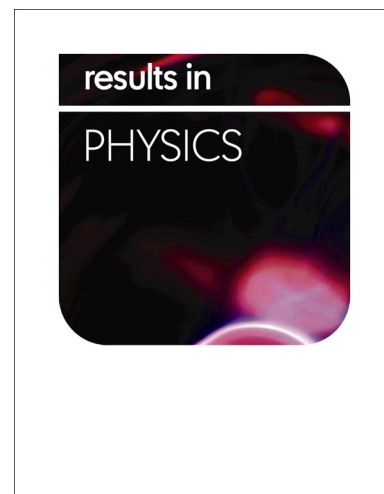
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PII: S2211-3797(18)31597-3
DOI: <https://doi.org/10.1016/j.rinp.2018.09.013>
Reference: RINP 1658

To appear in: *Results in Physics*

Received Date: 8 July 2018
Revised Date: 5 September 2018
Accepted Date: 6 September 2018



Please cite this article as: Ibraheem, A.A., El-Taher, A., Alruwaili, M.H.M., Assessment of natural radioactivity levels and radiation hazard indices for soil samples from Abha, Saudi Arabia, *Results in Physics* (2018), doi: <https://doi.org/10.1016/j.rinp.2018.09.013>

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Assessment of natural radioactivity levels and radiation hazard indices for soil samples from Abha, Saudi Arabia

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ABSTRACT

The natural level of radioactivity in the soil is one of the main causes of external gamma exposure. It was considered necessary to measure concentrations of gamma ray activity due to naturally occurring, potentially hazardous radionuclides from, ^{226}Ra , ^{232}Th and ^{40}K for soil samples collected from different locations (Abha, Khamis Mushait and Muhail Asir) in Asir region. The samples were analyzed for its naturally occurring radionuclides by gamma- ray spectrometry using NaI(Tl). The results show that the average values of activity for ^{226}Ra , ^{232}Th and ^{40}K in range of 38.2 ± 0.1 to 44.1 ± 0.1 , 23.49 ± 0.20 to 41.9 ± 0.2 and from 182.5 ± 1.0 to 251.5 ± 1.3 Bq Kg^{-1} respectively. Also the frequency distribution for all radioactive variables in soil was analyzed. Additionally evaluations have been made of the radiological hazards and it's diagramed by Surfer program in maps. These data will serve as the baseline level of radionuclides that occur naturally in the study area and will be useful for tracking and assessing any pollution inventory in the environment of this region.

Keywords: Frequency distribution, Server 7, Abha, Khamis Mushait and Muhail Asir.

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1. INTRODUCTION

Human exposure to ionizing radiation is one of the scientific subjects that attract public attention, since radiation of natural origin is accountable for most of the total radiation exposure of the human population. There are many naturally occurring radionuclides in environment; these natural radionuclides exist in soil, sediment, water, plants and air ⁽¹⁾. One of the main determinants of the natural background radiation in soil is radionuclide concentration. The natural radionuclides like ^{238}U , ^{232}Th and ^{40}K have been contained in volcanic geographic structures as well as rocks that are rich in phosphate, granite and salt. ⁽²⁾. When rocks are disintegrated by natural processes, radionuclides are

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