

Study on environmental radiation levels and their associated health risks to common public of Dera Ghazi Khan, Southern Punjab, Pakistan

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Abstract

Background: The Earth is a radioactive planet and soil contributes extensively to external and internal exposure by gamma and beta doses to environmental radioactivity. Environmental matrices with elevated levels of NORMs can expose humans to higher levels of radiation and, once present in the soil, can be absorbed by plants and crops intended for human and animal consumption. **Objectives:** The objectives of this study were to measure radiation levels from selected environmental matrices, and to evaluate associated radiological doses and excess lifetime cancer risk factor. **Methods:** To achieve these objectives samples were collected from various locations of Dera Ghazi Khan, Pakistan. The samples of soil and vegetation were analysed by using high purity (HPGe) gamma spectroscopy. Spectrum analysis was done by using Genie 2000 software. While, the water samples were analysed by using scintillation detector for the measurement of gross alpha and beta activities. The results accuracy was confirmed by the standards obtain from International Atomic Energy Agency. **Results &** **Conclusion:** The radioactivity of measured radionuclides (226 Ra, 232 Th and 40 K) in soil samples were surpassed the world average reference values given by (UNSCEAR, 2000). The radiological hazards such as Req, Hin, and Hex are under permissible limits while Dair, AEDE, AGDE and ELCR have higher values than world's average limit. The radiological risk assessment specifies that soil of the study area possess insignificant health risk to the residents. Only 40K was assessed in vegetation samples. The gross alpha and gross beta activities in water samples fall within the permissible limits recommended by WHO. This study could be used as a baseline for further radiation epidemiological studies and comparing any changes in radiation levels in future.

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Biography

Sidra Ghias is a Lecturer at Quaid-I-Azam University, Islamabad Pakistan. His research is a comparative analysis of the current legal regimes for air pollution regulation in the UK and Kosovo and the impact it has on human and environmental health. Her

interests are connecting the dots between complex legal and scientific concepts and exploring how the nexus between science and law could be further developed and applied to legal regimes. Her research objectives are identifying the implications of poor air quality across generations and finding practical solutions that could be applied in environmental law and policy.