Identification of soil physico-chemical characteristics and natural radioactivity parameters.

Daniel George*

Department of Physical and Environmental Sciences, Texas A&M University-Corpus Christi, 6300 Ocean Drive, Corpus Christi, TX 78412, USA.

Introduction

Major rivers in an area are frequently important supplies of drinking water for the local populace, and radionuclide levels in the water have a direct impact on that population's health. The World Health Organization's various concentration levels are useful as screening values for identifying water source pollution, but their potential as regulatory or early warning limits is constrained. In order to identify potential pollution risks, the regulatory authority must manage water bodies by level based on radionuclide content. A statistical study and dosage assessment of the water radioactivity were done from 2017 to 2019.

The quantity of radionuclides that are bonded to airborne particles determines the majority of the particle radioactivity, a property of particulate matter. High amounts of particle radiation exposure have been linked to detrimental health effects. For the purpose of assessing exposure, there aren't any geographically or time resolved data on particle radioactivity yet [1,2].

Meeting the UN goal of providing developing countries with access to clean drinking water can be severely hampered by the presence of naturally occurring radionuclides, particularly in situations where the technologically advanced naturally occurring radioactive elements are involved (TENORM). Several naturally occurring and emitting radionuclides, such as U, Ra, and others, are typically dissolved in surface water supplies and their concentrations vary over a wide range, mainly depending upon the amount of radioelements present in bedrock and soil with which the water comes in contact.

The radioactive content of the water has increasingly drawn more attention because it is directly tied to the citizens' health. 5 The levels of gross radioactivity and radioactivity in water essentially reflect each other and can be used to track radioactive pollution. The quantity of radionuclides that are bonded to airborne particles determines the majority of the particle radioactivity, a property of particulate matter. High amounts of particle radiation exposure have been linked to detrimental health effects. For the purpose of assessing exposure, there aren't any geographically or time resolved data on particle radioactivity yet [3].

Nearly 84 marine sediment samples from twelve locations in four cities (Quseir, Safaga, Hurghada, and Ras Gharib) along the Egyptian Red Sea sectors were gathered for this study. To determine the degree of natural radioactivity, the samples that were gathered underwent a thorough analysis. High quantities of natural radioactivity can be found in the Kingdom of Saudi Arabia's (KSA) groundwater supplies. Gross alpha () and gross beta () levels in drinking water are above both national and international standards in the northwest of the Kingdom of Saudi Arabia. In this study, we built an automated machine learning (AML) method and applied it to quantify correlations between distinct geological, hydrogeological, and geochemical variables and gross activities [4,5].

Between the discovery of natural radioactivity in 1896 and the creation of manmade radioactive elements in 1934, scientists made remarkable efforts to comprehend the fundamental makeup of the atom. In 1896, Becquerel identified radioactivity in uranium salts. In 1898, Marie and Pierre Curie discovered two new radioactive elements, radium and polonium, which were found in a few uranium and thorium rocks.

Measurements of low level radioactivity are crucial components of radiation measurements. The ambient backgrounds must be thoroughly eliminated, and the particle energies must be separated clearly, making the low level radioactivity measurements quite challenging. As a result, coincidence methods and high energy resolution detectors are used to monitor low level radioactivity [6].

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***Correspondence to:** George D, Department of Physical and Environmental Sciences, Texas A&M University-Corpus Christi, 6300 Ocean Drive, Corpus Christi, TX 78412, USA, E-mail: george@tamucc.edu

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