

Uranium Exposure to a Community Population: Renal Proximal Tubule

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ABSTRACT

Uranium a radioactive element and a source of radioactive pollution directly influence the humans those are exposed to it. Sometimes high uranium content is present in phosphate rock used for the manufacturing of fertilizer. Besides being heaviest naturally occurring metal, uranium is one of the primeval radionuclides that can be found in low levels within all rocks, soil and water. In the record of history never has a scientific discovery so profoundly affected the course of human fate as the discovery of atomic energy. Therefore, its potential for destruction is massive and its use for economic purpose is limitless. In present era, rightly known as the atomic age, the emission of radiation in the form of rays or particles called radioactivity. There are many deposits of uranium in Pakistan and their uses cause much positive as well as negative impact on humans and environment. Uranium having a potential to cause a spectrum of adverse health effects ranging from renal failure and diminished bone growth to damage to DNA, because uranium possesses both chemical toxicity as well as radioactivity, assessing the relative contributions of each to its toxic profile is difficult. By knowing these risk factors, there is a need of hour that we should work on the impacts of uranium in environment and humans to devise new techniques and measurements for the reduction of uranium pollution and this will be helpful for others to devise more acceptable and facile methods in future. In this article, aimed to discuss toxicology of uranium, sources of emission as well as their impact on human health and environment.

Keywords: Radioactive; Uranium; Radioactivity

COMMENTARY

Being rare in nature, heavy metals are those having high densities, atomic weight or atomic number, but in modern era these are present in many facets of life. These are present in earth core, mantle and crust. These metals are used for many purposes, for example, golf clubs, cars, antiseptic, self-cleaning ovens, plastics, solar panels, mobile phones, and in particle accelerators. Heavy metals are also employed in nuclear reaction targets for the production of neutron and with high atomic numbers occur in diagnostic mining, electron microscopy and also in nuclear sciences. In electron microscopy, heavy metals for instance lead, gold, palladium, platinum, or uranium are used to make conductive coatings and to introduce electron density into biological specimen through staining, negative staining, or vacuum deposition. Through nuclear sciences, nuclei of heavy metals such as chromium, iron, zinc or uranium are sometimes

discharge on other heavy metal targets to produce super heavy elements and insoluble uranium compounds, as well as dangerous radiation they emit, can cause permanent kidney damage.

Besides being heaviest naturally occurring metal, uranium is one of the primeval radionuclides elements that can be found in low levels within all rocks, soil and water. In the record of history never has a scientific discovery so profoundly affected the course of human fate as the discovery of atomic energy, therefore, its potential for destruction is massive and its use for economic purpose is limitless. In present era, rightly known as the “Atomic age”, the emission of radiation in the form of rays or particles is known as radioactivity. By radiation or radioisotopes, it generally means some astonishing type of rays or energy that is emitted by radioactive isotopes such as alpha, beta and gamma, which are impulsive, invisible, and penetrating and are generally harmful for all live forms. As in Pakistan uranium research is restricted for the safety of nuclear power. For this reason, very less data

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is available to study uranium deposit in Pakistan. According to my opinion there is a need to promote research about uranium deposits in Pakistan, promote survey in different areas of Pakistan as well as monitoring of old uranium mines. So that it will be helpful in keeping update knowledge on environmental radioactivity, to identify undue exposure of population members to ionizing radiation from uranium mining and milling waste, and to identify dispersion as well as transfer pathways of radionuclides in soil, in irrigation water and in order to abate radiation exposure of population.

For precautionary measure, workers in mining areas should follow rules and regulation, for instance they should use gloves and jackets to handle uranium so as to ensure that they do not

inhale or ingest it and also maintain a time schedule for worker so that they are exposed to a limited radiation. Use advanced technique and machinery for uranium mining in order to overcome its distribution in environment, its exposure on human. There is also a need to provide awareness to people about radiation exposure so that it will be helpful in reducing radiation exposure. Naturally humic acid have a potential to greatly reduce the mobility of uranium in environment but it will also increase the microbial activity that degrade the crops. So, we have to make a chemical compound in laboratory that have same property as humic acid in order to reduce the uranium mobility in environment and that cause no environmental hazards.