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Heavy Metals Toxicity in Soil and its Impact on Human Life and Environment

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Editorial

Metals and rocks have an important role in our lives due to their numerous benefits to humans, especially that they are included in all industrial, agricultural and economic needs. Soil pollution of heavy metals has become a major and acute problem in many regions of the world because of its direct and indirect impact on human health. Their presence in the soil also indicates the toxicity of foods caused by human activities and natural processes, which lead to an increase in their concentration in agricultural soil. Soil pollution is considered one of the most dangerous types of pollution as it is difficult to observe, since it's colourless and odourless In addition to its stability and lack of biological decomposition, toxicity, diffusion in water, air and soil. Although heavy metals are naturally present in the soil, their concentrations may increase due to several natural factors and external influences, for example: metal smelting, burning fossil fuels, the use of fertilizers and pesticides, agricultural waste inputs, industrial emissions, wrongful disposal of industrial waste by burying it, erosion, decomposition and transportation of exposed rocks due to rain, floods, winds, etc. Saudi Arabia's agricultural soil has a poor quality, due to lacking sufficient amounts of nutrients, organic matter and moisture, However Saudi Arabia has good soil in 1980s, but using huge amounts of water resources and fertilizers, to the accumulation of organic and inorganic contaminants in soil. Most of the heavy metals present in high concentrations in the soil have toxic effects that may pose a threat to human, animal and plant health.

There are many heavy metals that carry risks in their core and each metal has a different harm than the other, for example lead, despite its importance in human activities, but it is toxic and causes disorders in the nervous system and brain damage and among the harmful heavy metals is also chromium. In industry, chromium is important in the industrial field. However, the presence of chromium in high concentrations can cause many damages, including kidney failure, irritation and dermatitis. Arsenic, cadmium, lead, manganese, zinc, uranium and others. are some of the most harmful and toxic heavy metals to the environment Exposure to these heavy metals have a significant health damages to humans such as cadmium, when enters the human body, 70% of it attacks the liver, kidneys and remains in the bones, as it is difficult to get rid of, it leading to many diseases and health complications, including osteoporosis, since it causes lung damage and endocrine disorders.

Researchers in China conducted a study on agricultural soils over the period (2005-2013) showed that about 82% of the soil contains toxic inorganic pollutants such as, Pb, Cd, Cr, As, while the soil contamination with lead reached 1.50%. Moreover, researchers in Congo-Brazzaville studied the concentrations of 5 heavy metals (Pb, Zn, Cu, As and Mn) in 2011. the soil samples are collected from different depths and the results of concentration levels in the soil are listed in the following order: Pb > Mn > Zn > As > Cu.

Also, in wadi jazan the researchers were measured heavy metals by using ICP-MS. Results shown that soil of Wadi Jazan area has many different concentrations of heavy metals. The most extremely soil pollution at Wadi Jazan was by Cd, where all analyzed samples have higher focus than the greatest passable fixation by the World Wellbeing Association. In the soils around Perlis were studied 5 heavy metals concertation (Cu, Cr, Ni, Cd and Pb). Samples were gathered at profundity of 0-15cm in eighteen station around Perlis. The concentration of heavy metals in the soil ware as the following decreasing trend: Cu > Pb > Cr > Ni > Cd.

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