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Health Risk due to Soil Pollution

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Introduction

Chemicals and pathogens in the soil have interchangeable liquid, solid, and gaseous forms that mix until a balance is found between the three. Solid forms are absorbed or combined with soil particles, liquids fill the spaces between soil particles created by pores, and gaseous forms envelop the air between soil particles. This indicates that humans can be exposed to several types of soil contamination, such as gaseous, liquid, and solid, separately or simultaneously. Soil pollution can enter our bodies directly - through inhalation of soil dust or soil particles, or skin contact or indirectly through the intake of food, particularly vegetables cultivated in polluted soil, or by inhaling the harmful vapours of contaminating volatile substances.

Soil pollution occurs when harmful chemicals, pollutants, or contaminants are present in high enough concentrations in the soil to pose a threat to plants, wildlife, humans, and the soil itself. Due to global warming, agricultural fertilisers, and pesticides, arable land is turning to desert and becoming non-arable at ever-increasing rates, lowering hopes of feeding our burgeoning population [1].

Description

Human health is influenced by soil in a variety of ways, with human health being connected to soil health. Historically, the negative effects of soils on human health have been emphasised, such as exposure to poisons and pathogenic organisms, as well as the challenges caused by producing crops in nutrient-deficient soils. However, soils benefit human health in a variety of ways, ranging from food production and nutrition supply to drug delivery and immune system strengthening. The soil is increasingly recognised as an ecosystem with a plethora of interrelated pieces, each of which influences the other, and when all necessary parts are present and functioning (i.e., the soil is healthy), human health benefits as well [2]. Organic chemicals are also a part of our industrial history, and many of them are still employed today. Toxicologists aiming to understand the health effects of these widely used compounds have significant obstacles due to complex combinations of these chemicals in the environment and in our bodies [3].

The study of soil science, human biology, sampling, and the connections between vast numbers of influencing factors on soil and health pose numerous methodological obstacles. In the more common circumstances of low-level, long-term exposure to a cocktail of chemicals from soil and other sources, absolute confirmation of cause and effect may not be possible. Organic chemicals are also a part of our industrial history, and many of them are still employed today. Toxicologists aiming to understand the health effects of these widely used compounds have significant obstacles due to complex combinations of these chemicals in the environment and in our bodies. The study of soil science, human biology, sampling, and the connections between vast numbers of influencing factors on soil and health pose numerous methodological obstacles. In the more common circumstances of low-level, long-term exposure to a cocktail of chemicals from soil and other sources, absolute confirmation of cause and effect may not be possible [4].

To improve bacterial and fungal sequencing capabilities, metagenomics, and subsequent analysis and interpretation, there is a need to better link soil ecology and agronomic crop production with human health, food/nutrition science, and genetics. While soil microbiology has gotten a lot of attention, macro-organisms have gotten a lot less attention in terms of their links to human health, and they need it. Finally, because individuals cannot act on information they do not have, there is a compelling need to properly convey soil and human health relationships to our greater society. To advance these concerns forward, multidisciplinary teams of researchers, comprising scientists, social scientists, and others, will be required [5].

Conclusion

The majority of studies looking at the effects of soil chemistry on human health have traditionally focused on heavy metals. Contamination factor, geo-accumulation index, enrichment factor, contamination degree, sum of pollution index, single pollution index, ecological risk index, integrated pollution index, Nemerow pollution index, pollution load index, hazard index, dermal absorption factor, and aggregated carcinogenic risks are some of the indices that have been developed to assess the degree of soil contamination and its potential impact on human health. These indices aid in determining the extent of soil contamination and human exposure dangers.

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