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# Role of Edaphic Factors in Accumulation and Chemical Speciation of Arsenic in Agricultural Food Produce

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**Abstract:** *Arsenic (As) is recognized as a toxic element and has been classified as a human carcinogen (group I) causing skin, lungs and bladder cancers. Arsenic contamination is a worldwide problem including several parts of India. While As contamination in drinking water has attracted much attention, plant based foods are also an important source of As. From irrigation water As gets loaded in agricultural soil and eventually accumulates in food grains and vegetables. Arsenic exists in several chemical forms and its accumulation and toxic effect to plant strongly depends on its availability and chemical speciation in soil. The chemical speciation and availability of As in soil is a complex phenomenon impacted by several edaphic and environmental factors. Both organic and inorganic forms of As are present in soil. Arsenate[As(V)]and arsenite [As(III)] are the major soluble inorganic forms of As and are also the most abundant As species. In aerated/aerobic soil As(V) while in anaerobic soil As(III) is the predominant form. Further, the availability of As(III) is generally higher in soil solution than As(V) because the former is relatively more weakly retained in the soil matrix. Organic As i.e. methylated forms of As are also present in small amount. However, depending on soil organic matter, moister and mineral composition they can be in significantly high concentration in some soils. Thus, availability of As in soil is driven by multiple factors, such as rain fall, temperature, pH, CEC, texture, Fe oxides & hydroxides, organic matter, sulfur & phosphorus concentration, soil redox conditions etc. Understanding these factors is important for mitigation of As problem in food through proper soil amendment or by selection appropriate crop.*

**Keywords:** Arsenic in Crops, Edaphic Factors, Inorganic and Organic Arsenic

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