# Phosphate in Soils: Interaction with Micronutrients, Radionuclides and Heavy Metals (Advances in Trace Elements in the Environment)

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***Edited by One of the Best Specialists in Soil Science***

Recent studies reveal that Phosphorus (P) in the form of phosphate, a macronutrient essential for plant growth, and crop yields can influence the bioavailability, retention, and mobility of trace elements, metal(loid)s, and radio nuclides in soils. When this occurs, phosphates can affect the dynamics of heavy metals and influence soil characteristics, impacting soil mobility and toxicity.

Phosphate in Soils: Interaction with Micronutrients, Radionuclides and Heavy Metals utilizes the latest research to emphasize the role that phosphate plays in enhancing or reducing the mobility of heavy metals in soil, and the soil-water-plant environment. It provides an in-depth understanding of each heavy metal species, and expands on phosphate interactions in geological material.

Composed of 12 chapters, this text:

- Provides an overview of the reactions of metal(loid)s and common P compounds that are used as fertilizer in soils
- Emphasizes the effect of phosphorus on copper and zinc adsorption in acid soils
- Discusses findings on the influence of phosphate compounds on speciation, mobility, and bioavailability of heavy metals in soils as well as the role of phosphates on in situ and phytoremediation of heavy metals for contaminated soils
- Places emphasis on the influence of phosphate on various heavy metals species in soils, and their solubility/mobility and availability

- Provides extensive information on testing various high phosphate materials for remediation of heavy metal, micronutrients, and radionuclides contaminated sites
- Explores the reactivity of heavy metals, micronutrients and radionuclides elements in several soils
- Presents a case study illustrating various remediation efforts of acidic soils and remediation of Cu, Zn, and lead (Pb) contaminated soils around nonferrous industrial plants
- Emphasizes the significance of common ions (cations and anions) on phosphate mobility and sorption in soils, and more

The author includes analytical and numerical solutions along with hands-on applications, and addresses other topics that include the transport and sorption modeling of heavy metals in the presence of phosphate at different scales in the vadose zone.

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