Preface

Environmental and organismal (flora, fauna, and human) health can be impacted by varied chemical pollutants, continuously increasing in major environmental compartments. Notably, the bioavailability, stabilization, and degradation of pollutants are the major drivers that control the pollutant's exclusion, remediation/accumulation, and/or metabolism, performed by innovative technology involving biological (plants and associated microbes, etc.) and/or non-biological/(electro)chemical strategies.

This two-volume work is an effort to gather information on and get insights into biological and non-biological (chemical) approaches extensively studied and adopted for the speedy cleanup of pollutants from environmental compartments. In *Volume 1*, (a) important concepts such as biological remediation strategies to enhance soil quality at contaminated sites were overviewed; (b) synergistic influences of tolerant plants and rhizospheric microbial strains on the remediation of pesticide-contaminated soil were highlighted; and (c) the role of plant types such as hyperaccumulator plants in the cleanup of polluted soils was discussed. Overall, the literature available on the major mechanisms and underlying natural inherent traits of various plants and microbes for tolerating, excluding, remediating, accumulating, or metabolizing a variety of pollutants were critically appraised and elaborated in *Volume 1*. Non-biological (chemical) approaches for enhancing the cleanup of contaminated soils have been dealt in *Volume 2*. In brief, *Volume 2* (a) highlighted important concepts such as the role of metallic iron in the decontamination of hexavalent chromium polluted waters; (b) discussed nanoscale materials and electrochemical approaches used in water and soil remediation; and (c) elaborated in detail the synthesis and characterization of cation composite exchange material and its application in removing toxic metals.

A good equilibrium between theory and practice without compromising the basic conceptual framework of the concerned topic has been ensured in this treatise.

This work can be a useful asset to students, researchers, and policy makers specializing in the areas of soils/sediments and aquatic pollution, environmental chemistry/microbiology/plant physiology/molecular biology, sustainable development, ecology, soil biology, and related disciplines.

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