

Preface

Rapid industrialization towards better economic development has resulted in environmental degradation globally. Major contamination sources from industry, agriculture and urban areas are a threat to the natural environment, the impacts of which are severe in both developed and developing countries. The accumulation, mobilization and toxicity of various contaminants in soils and groundwater are degrading the natural environment and are limiting the sustainable development of the nation as well. There is an urgent need for the conservation and effective utilization of natural resources; looking towards adoption of low cost techniques, low waste generation and environmentally friendly approaches to remediate contamination.

Increased need for the remediation of the diverse and ever-increasing classes of waste and waste dumping sites has created a demand for improved and newer remediation methods that are applicable at low cost and for a wider scope of waste management. A dramatic increase in the use of biological methods of waste remediation has been evidenced showing a positive inclination in environmental conservation. In addition to the generic studies benefited through waste remediation, there are some current factors that make biological approaches more attractive today. Recent researches focus on bioremediation, which is mainly concerned with usage of microbes and biological agents to improve the quality of environment and prevention of pollutant discharge into the environment, remediating the contaminated sites and also generating the valuable products to the society.

This book showcases the effective identification, delineation and remediation of contamination through simple ecofriendly methods using organisms or products for all aspects of land-, air- and water-based pollution. The recent issues related to environment deterioration and also biological approaches towards restoring the ecosystem is dealt with focusing on the role of bacteria, fungi and biosynthesized nanoparticles in pesticide degradation, dye degradation, dairy effluent treatment, food waste management, paper cup degradation, nitrate removal and heavy metal removal. In most cases, bioremediation can lead to simple organic constituents through reduction of wastes. Some chapters emphasize on bioenergy and bio-products such as biohydrogen, bioethanol and bioplastics as derived products.

In short, this book discusses the scope of bioremediation and the assessment of various biological approaches to the remediation in itself with much attention being paid to the biological products derived from the waste processes.

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