

Bioremediation Strategies for Treatment of Polluted Soils and Water Resources in Dryland Areas

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ABSTRACT

Bioremediation is a safe, cost-effective and environmental-friendly technique, and it refers to the use of living organisms such as microorganism, fungi and plants for remediation of contaminated regions. Bioremediation has vast scope in remediation of polluted sites such as heavy metal contaminated sites, light non-aqueous phase liquids in coastal (semi)-arid environment, removal of harmful and toxic pollutants from water bodies such as benzene, toluene and Polycyclic Aromatic Hydrocarbons. Based on location, it is of two types; *in-situ* and *ex-situ*. *In-situ*, such as phytoremediation, bioleaching, bioventing, electrobioremediation while, land farming, composting and biopiles are some *ex-situ* techniques. This chapter mainly concentrates on all these technologies for contaminated sites (soils and water resources) especially in arid and semi-arid regions and how affectively bioremediation can be applied in a sustainable manner.

1 INTRODUCTION

Soil and water pollution, a very crucial environmental problem, has been attracting considerable public attention over the last few decades. Almost 70% of India's surface water and groundwater resources are contaminated by biological, toxic, organic and inorganic pollutants. It is estimated that about 38,000 million litres per day (mld) of wastewater is generated in the urban areas of