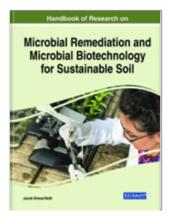
obial Remediation and Microbial Biotechnology for Sustainable Soil: 978179987062



Handbook of Research on Microbial Remediation and Microbial Biotechnology for Sustainable Soil

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Release Date: June, 2021 | Copyright: © 2021 | Pages: 806

DOI: 10.4018/978-1-7998-7062-3

ISBN13: 9781799870623 | ISBN10: 1799870626

EISBN13: 9781799870647

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The soil is considered to be one of the most important substances for the existence of the biotic community. The quality of the soil is continually degrading...

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Microbial Remediation and Microbial Biotechnology for Sustaina

Monika Yadav, Sonu Kumari, Junaid Ahmad Malik, Suphiya Khan Terrestrial soil is a complex part of the ecosystem hosting bacteria, fungi, protists, animals, and huge source of nutrients to plants. These soil-dwelling...

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The halogenated hydrocarbons have been widely used by human beings. They are xenobiotic and toxic. The microbes having a specific group of hydrolase enzymes...

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Petroleum is an important source of hydrocarbons, which are one of the major environmental contaminants that disturb ecosystem functioning and stability. In...

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Heavy metals are found naturally. Anthropogenic activities and rapid industrialization have led to their unprecedented release into the environment. Being...

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Synthetic dyes cause hazardous health-related problems in humans and affect the biological system underwater. They also have a negative impact on the...

Chapter 16

Microbial Bioremediation of Heavy Metals: A Genetic and Omics Approach

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ABSTRACT

Heavy metals are found naturally. Anthropogenic activities and rapid industrialization have led to their unprecedented release into the environment. Being non-biodegradable in nature, they persist in the environment. Prolonged exposure and accumulation of these metals poses a serious threat to the ecosystem. Conventional treatment of contaminated material whether soil or water involves expensive chemical or physical methods which are arduous, energy demanding, and carry the risk of secondary contamination. It is thus necessary to adopt a sustainable remediation process to mitigate this problem. Biological remediation processes are preferable as they are environmentally safe, techno-economically feasible, and do not generate toxic byproducts. Microbial bioremediation is particularly attractive as it allows remediation processes by tapping naturally occurring catabolic capacities to transform, accumulate, and adsorb metals for detoxification. It is a comparatively low-cost technology. Therefore, microbial bioremediation is promising as an alternative to physico-chemical methods.

DOI: 10.4018/978-1-7998-7062-3.ch016