

Advances in Wastewater Research

Veer Singh  
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Maulin P. Shah *Editors*

# Heavy Metal Contamination in Wastewater and Its Bioremediation by Microbial-Based Approaches

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# Current Update on Microbial-Based Water Treatment and its Role in Achieving Sustainable Development Goals

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Arpit Srivastava, Kamlesh Choure & Reena Vishvakarma

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## Abstract

Microbial-based water treatment has emerged as a promising approach to address the concerning issue of water scarcity and pollution. This chapter highlights the current advancements in microbial engineering approaches for wastewater treatment, emphasizing the role of microorganisms in achieving the United Nations’ Sustainable Development Goals (SDGs). Specifically, it focuses on the applications of microbes in water purification, bioremediation, and resource recovery from wastewater. This chapter discusses the importance of microbial communities in water treatment processes, including their ability to degrade pollutants, remove contaminants, and recover valuable resources. It also explores the impact of disinfection methods on microbial communities and the potential risks associated with the presence of resistant pathogens. Furthermore, it highlights the potential of microbial-based water treatment to contribute to the achievement of SDGs, emphasizing the need for sustainable and eco-friendly technologies that align with the principles of the circular economy and promote environmental sustainability. This chapter concludes by emphasizing the urgent need to develop and implement microbial-based water treatment solutions that are both effective and environment suitable. Coupling the understanding of microbes’ effect on wastewater treatment with the SDGs can lead to positive changes globally.

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