

Bioremediation of Soil PAHs: Native Microbes and Toxicity Analysis

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ABSTRACT

Fossil fuel is the predominant energy source across all the major sectors, out of which industries and transportation collectively share approximately 75% of the total energy consumption by 2040. The anthropogenic activities toward meeting the energy requirements have resulted in an alarming rise in environmental pollution levels. Among pollutants, polycyclic aromatic hydrocarbons (PAHs) are the most predominant due to their persistent and toxic nature. Amidst to the physico-chemical method, biodegradation is a viable alternative. This study investigated biodegradation using microbial route. Intermediate toxicity tests were also conducted to determine PAH bioremediation's effectiveness and assess the overall degradation process. The comprehensive toxicity evaluation during the degradation process provided helpful information for using microbe-orientated strategies in PAH bioremediation. Soil health assessments, including toxicity testing, provide valuable insights into the overall condition of the soil and its ability to support microbial life and plant growth. Overall, this study provided valuable insight during PAH degradation with comprehensive toxicity assessment and soil health examination for effective bioremediation of PAH-contaminated sites and restoring soil health.

Keywords: *Microbes, Bioremediation, Toxicity, Soil health, PAHs*

