

Biotechnological Approach for Mitigation Studies of Effluents of Automobile Industries

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Abstract

Automobile industry effluents are highly contaminated with various heavy metals like Zn, Ca, Pb, Ni, Cr, and Fe, paint particles, coolants, phosphate coating, and oil and grease. The discharge of such toxic effluents without any treatment contaminates natural water bodies. To study the efficiency of biological treatment of the feeding effluent of automobile industries, two pilot plants were set up at a lab scale: one was the conventional bioreactor plant and another was the novel bioreactor with modified design concept. In the novel bioreactor, inside baffles are constructed, and two impellers are used: one at the surface and the other at the bottom. After the comparative study, it was finally concluded that the novel bioreactor efficiency was two times more than the conventional bioreactor. Hence, it is recommended that novel bioreactors can play a vital role in treating the effluent of automobile industries. The microbe of the activated sludge helps to adsorb various heavy metals from the effluent. *Pseudomonas aeruginosa* was found abundant in the effluent of automobile industries.

Keywords

Treatment Automobile industry Heavy metals Bioreactor Reduction
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Contents

Introduction	2
Literature Review	3
Results and Discussion	5
Conclusion	15
Cross-References	17
References	17

Abstract

Automobile industry effluents are highly contaminated with various heavy metals like Zn, Ca, Pb, Ni, Cr, and Fe, paint particles, coolants, phosphate coating, and oil and grease. The discharge of such toxic effluents without any treatment contaminates natural water bodies. To study the efficiency of biological treatment of the feeding effluent of automobile industries, two pilot plants were set up at a lab scale: one was the conventional bioreactor plant and another was the novel bioreactor with modified design concept. In the novel bioreactor, inside baffles are constructed, and two impellers are used: one at the surface and the other at the bottom. After the comparative study, it was finally concluded that the novel bioreactor efficiency was two times more than the conventional bioreactor. Hence, it is recommended that novel bioreactors can play a vital role in treating the effluent of automobile industries. The microbe of the activated sludge helps to

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