عنوان مقاله:

Chlorpyrifos Bioremediation in the Environment: A Review Article

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خلاصه مقاله:

Introduction: Chlorpyrifos is an organophosphorus pesticide that is commonly used in agriculture. This toxin is harmful to a wide range of organisms, including living organisms, useful arthropods, fish, birds, humans, animals, and plants. There are many physical, chemical, and biological methods for the removal of organophosphorus pesticides from ecosystems, among which biodegradation is preferable because of environmental compatibility and cost-effectiveness. Identifying the effective genes and enzymes in the specific functional groups of pesticides and understanding the kinetics of biodegradation is essential for successful biorefining. Materials and Methods: This study was a narrative review article. For this purpose, relevant studies indexed in a variety of databases such as Google Scholar, Elsevier, Scopus, Science Direct, Magiran, and SID which published between 2004 and 2018 were retrieved using the key words Bioremediation, chlorpyrifos,Dursban, and microorganism. Finally, a total of 51 articles were studied. Results: The major processes of chlorpyrifos destruction are evaporation, photolysis, chemical hydrolysis, and microbial degradation. Biodegradation is an environmentally friendly and highly efficient process that can be used as an alternative to chemical and physical methods. In this process, the microbial population is used to convert complex toxic compounds into less toxic ones. Conclusion: Chlorpyrifos, which was previously thought to be resistant to advanced biodegradability, has currently shown to undergo advanced biodegradation by bacterial and fungal species. In the future, studies of genesthat are highly capable of biodegradation will lead to a complete degradation method that is involved in the microbial destruction of this toxin.

کلمات کلیدی:

Bioremediation, Environment, Chlorpyrifos, Biorecining, Microorganism.