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Short Communication

A Thought on Biological Wastewater Treatment

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This writes up will discuss the new and emerging innovative trends in the application of biological processes in industrial wastewater treatment. It will also include the fate of chemicals produced after the treatment process both at the laboratory scale and at the industrial scale. The article interestingly explores the unique biological aspects of the wastewater treatment process and highlights the advantages they provide for technological applications in industry. Each chapter covers different biologically based approaches and examines basic principles, practical applications, recent discoveries and related limitations.

It presents an array of cutting-edge wastewater treatment research and thereafter its applications in treatment, remediation, sensing, and pollution prevention processes. The biological process for application in wastewater research has a significant impact on maintaining the long-term quality, availability, and viability of water.

It will elucidate the technologies of biological wastewater treatment processes. Biological processes introduced in wastewater treatment processes include: (1) wastewater bioremediation including aerobic treatment (oxidation ponds, aeration lagoons, aerobic bioreactors, activated sludge, percolation or trickling filters), biological filters, rotary biological contactors, bioremoval of nutrients) and anaerobic treatment (anaerobic bioreactors, anaerobic lagoons); (2) wastewater phytoremediation including built wetlands, rhizofiltration, rhizodegradation, phytodegradation, phytoaccumulation, phytotransformation, and hyperaccumulators; and (3) mycoreremediation of wastewater.

The article describes a wide variety of biological processes and water research that are considered essential components of advanced water purification. This includes desalination technologies that remove, reduce or neutralize water pollutants that threaten human health and/or ecosystem productivity and integrity.

At present, there is a sharp paradigm shift towards the selection of technologies for the cleaning of environmental contaminants. When compared to traditional environmental cleanup technologies, biologically driven technologies have various advantages, including biocompatibility and an efficient detoxification process. In terms of the economics, such technologies are less expensive in terms of inputs, have more reusability, use less energy, and require less maintenance. Huge volumes of residual by-products are formed in traditional based technologies, which can lead to secondary contamination if not properly managed, but this is almost non-existent in biologically driven technologies. Furthermore, because of tight environmental legislation, it is now more vital to investigate biologically propelled technolo-

gies because of their environmentally friendly nature. As a result of these factors, such technologies are currently gaining traction around the world. Now, increasing attention is being placed on the development of novel techniques to improve and speed up natural cleanup processes.

As the burden of anthropogenic pollutants continues to rise, it has an equivalent detrimental influence on the environment, lowering the quality of numerous environmental components. Without a doubt, there are varieties of physical and chemical-based restorative treatments available to counteract such risks. However, due to the hidden or eventual adverse effects linked with each of the technologies, most of them are not safe for the environment. Biologically driven technologies appear logical in the context of environmental safety, compliance with laws, and a desire for long-term goals. Considering these considerations, we must increase our understanding of bio-based technologies and should place a larger emphasis on them in order to judiciously and safely address the current global pollution problem.

The article would offer a constructive outlook on the growing problem of pollution in the environment. It is intended to highlight contemporary environmental microbial biotechnology-based technologies that are now in vogue for managing a range of environmental contaminants released by a variety of industries. The scientific data and information could also aid in the design or development of possible green alternative technologies that can effectively solve the problem of pollution.

This mainly applies to each of the main factors contributing to the removal of toxic pollutants from wastewater, namely methods and procedures, materials (especially cheap materials derived from industrial and agricultural waste), management of wastewater containing toxic pollutants, the possibility of value change of waste. resulting from the removal of toxic pollutants from wastewater etc. We also encourage applications for recycling, environmental impact and wastewater policy after removal of heavy metals. It will focus on the advanced and recent trends in the remediation of toxic pollutants through an approach of environmental processes from either industrial wastewater or sewage wastewater. This write up is especially devoted to "Industrial Wastewater Treatment" and aims to present the current state of the art and innovative research that will address these challenges, so that wastewater treatment systems can adapt and be fit for purpose, robust, and resilient for the next 100 years. It is equally beneficial for students and teachers to understand new research advances in this field. The main objective of this commentary is to summarize the work of eminent scientists in this field to provide a clear but concise chapter that can be used as a quick reference for environmental engineers and researchers, and to be effectively applied in undergraduate and higher education. postgraduate. graduation. graduate students as well as extension and extension.

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