International Journal of Environment and Health Sciences (IJEHS)
2022, VOL. 4, Issue.4, 12-13
https://doi.org/10.47062/1190.0404.03

BIOLOGICAL PROCESS AND FATE OF CHEMICALS IN INDUSTRIAL WASTEWATER TREATMENT

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Received on: 12.09.2023 **Revised on:** 17.09.2023 **Accepted on:** 17.09.2023

Abstract
This article will discuss the new and emerging innovative trends in the application of biological processes and fate of chemicals in industrial wastewater treatment. The fate of chemical substances generated after the purification process on a laboratory and industrial scale will also be considered. The article intrusively explores the unique biological aspects of the wastewater treatment process and highlights the advantages they provide for engineering applications in the industries with an approach to chemicals produced during industrial wastewater treatment. Each chapter covers a different biological-based approach and examines the basic principles, practical applications, recent breakthroughs, and associated 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 and fate of chemicals for application in wastewater research has a significant impact on maintaining the long-term quality, availability, and viability of water.

Keywords
Wastewater treatment, remediation, fate of chemicals.

The short opinion elucidates the technologies of biological wastewater treatment processes of fate of chemicals. The biological processes presented in wastewater treatment processes of fate of chemicals include: (1) bioremediation of wastewater that includes aerobic treatment (oxidation ponds, aeration lagoons, aerobic bioreactors, activated sludge, percolating or trickling filters, biological filters, rotating biological contactors, biological removal of nutrients) and anaerobic treatment (anaerobic bioreactors, anaerobic lagoons); (2) phytoremediation of wastewater that includes constructed wetlands, rhizofiltration, rhizodegradation, phytodegradation, phytoaccumulation, phytotransformation, and hyperaccumulators; and (3) mycoremediation of wastewater. The article describes a broad area of biological processes and water research which are considered key components for advanced water purification. It also includes the desalination technologies that remove, reduce, or neutralize water contaminants that threaten human health and/or ecosystem productivity and integrity. Article is mainly related to each of the main factors contributing to toxic pollutants removal from wastewater, namely, methods and procedures, materials (especially low-cost materials originating from industrial and agricultural waste), management of wastewater containing toxic pollutants, valorization possibilities of waste resulting from the removal of toxic pollutants from wastewater, etc. We also encourage submissions related to recycling, environmental impact, and wastewater policies post-heavy metal removal. This article 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 article is especially devoted to “Industrial Wastewater Treatment” and aims to present the current state of the art and innovative research that will

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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 professors for understanding the new research advancements in this field.

The main objective of this work was to summarize the work of the eminent scientists in this field in order to provide a clear but concise though that can be used as a quick reference for environmental engineers and researchers, and to be effectively implemented in higher education teaching undergraduate and graduate students, as well as extension and outreach.