

3rd International conference on Green Chemistry and Technology

March 14, 2022 | Webinar

Vermifiltration Technology: Earthworm assisted green technology for wastewater treatment

Sudipti Arora

Dr. B. Lal Institute of Biotechnology, Jaipur

Statement of the Problem: In a developing country like India, the uncontrolled growth in urban areas has left many cities deficient in water supply, sewerage, and storm water drainage services and it is due to these deficient services that wastewater and its management has become a tenacious problem, even though a large part of the municipal expenditure is allotted to it. This, in turn, results in an increase in morbidity especially due to pathogens and parasitic infections and infestations in all segments of the population, particularly the urban slum dwellers. The potential of using earthworms (EWs) to treat municipal sewage sludge, domestic wastewater, and human faeces is increasing, and many previous research studies have already shown that earthworm assisted remediation technology - vermifiltration could constitute alternatives to existing municipal and domestic wastewater treatment as well as faecal waste treatment technology. Earthworms change the properties of biofilm present in the active layer by their burrowing activity and ingestion. They also help in the degradation of organic matter by symbiotic and synergistic interactions with the indigenous microbes. Vermifiltration is a bio-oxidative process in which earthworms interact intensively with microorganisms within the decomposer community, accelerating the stabilization of organic matter and greatly modifying its physical and biochemical properties. This technology is a stand-alone technology providing tremendous benefits such as decentralized solution and high value end products like vermicompost and can be considered as a new paradigm for wastewater treatment processes. Vermifiltration coupled with other technologies have been thoroughly researched upon, especially in the past two decades as the need for water reuse and wastewater treatment is increasing in line with climate change. If applied on a full scale, vermifiltration technology would help society reach the triple bottom line of sustainability: good for the environment, good for the economy, and good for the people..



Recent Publications

1. Sudipti Arora, Sakshi Saraswat, Rinki Mishra, Jayana Rajvanshi, Jasmine Sethi, Anamika Verma, Aditi Nag, and Sonika Saxena. Design, Performance Evaluation and Investigation of the Dynamic Mechanisms of Earthworm-Microorganisms interactions for wastewater treatment through Vermifiltration technology, *Bioresource Technology Reports* 12 (2020): 100603.
2. Sudipti Arora, Sakshi Saraswat. Vermifiltration as a natural, sustainable and green technology for environmental remediation: A new paradigm for wastewater treatment process, *Current Research in Green and Sustainable Chemistry*, 4, 100061, 2021