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Study of Constructed Wetland for Treatment of Landfill Leachate

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Abstract: Constructed wetlands are engineered systems that have been designed and constructed to utilize the natural processes involving plants, soils, and their associated microbial assemblages to assist in treating wastewater. The main purpose of this study was to treat organic pollution, nitrates and phosphates present in landfill leachate by the use of constructed wetland systems by studying the effect of retention time and plant species variation. A lab-scale study was conducted on horizontal mode subsurface flow constructed wetland systems using gravel, sand and garden soil as media. Retention time was varied from 1 hour, 2 hours, 3 hours, 4 hours, 8 hours, 12 hours and 24 hours to study the variation in efficiency of treatment of two locally available plants species namely; Cattail (TyphaLatifolia) and Bulrush (ScirpusCalifornicus). Maximum removal efficiencies of Turbidity, COD, Total Solids, Nitrates and Phosphates achieved were 84%, 82%, 91%, 65% and 89%, respectively with the retention time of 8 hours. The plant species Cattail (TyphaLatifolia) showed better results as compared to Bulrush (ScirpusCalifornicus).

Keywords: Constructed Wetland; Landfill Leachate; Organic Pollution; Nitrates ; Phosphates.

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