REVIEW ON LANDFILL LEACHATE TREATMENT

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ABSTRACT

REVIEW ON LANDFILL LEACHATE TREATMENT

This thesis presents a comprehensive review of landfill leachate treatment methods, addressing the environmental challenges associated with the management of leachate from municipal solid waste landfills. Landfill leachate, a complex and variable wastewater, contains diverse contaminants that can pose significant environmental risks if not properly managed. The study identifies and describes various treatment methods, encompassing physical, biological, chemical, advanced oxidation, and membrane processes, evaluating their efficacy in contaminant removal. The research emphasizes the need for a balanced approach to treatment selection, considering leachate characteristics, treatment efficiency, and economic feasibility. Moreover, emerging contaminants, such as pharmaceuticals and microplastics, present challenges for conventional treatment methods, warranting the exploration of advanced technologies. Sustainability aspects and environmental consequences are also examined, emphasizing the importance of cost-effectiveness, resource conservation, and waste management in leachate treatment. The thesis provides recommendations for research and development, collaborative efforts, and continuous optimization to enhance landfill leachate treatment practices. Overall, this study serves as a valuable reference for waste management authorities, researchers, and industry stakeholders seeking sustainable and effective solutions for landfill leachate treatment, safeguarding human health and the environment.

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