

Analysis of Medical Waste Water Through Soil Aquifer Treatment

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Abstract: *Soil Aquifer Treatment (SAT) emerges as a promising sustainable approach for the remediation of medical wastewater. This study investigates the efficacy of SAT in treating medical wastewater, focusing on its ability to remove pharmaceutical compounds, pathogens, and organic pollutants. Through a comprehensive literature review and experimental analysis, various parameters influencing SAT performance are evaluated, including hydraulic loading rates, soil characteristics, and wastewater composition. Results indicate that SAT can efficiently reduce pharmaceutical concentrations, with degradation rates influenced by soil properties, microbial activity, and wastewater characteristics. Moreover, pathogen removal efficiencies demonstrate the potential of SAT to mitigate microbial risks associated with medical wastewater discharge. To treat waste water vertical method is used with various soil profiles. The black, red, mixed red and black soils are used to treat the medical waste water. We have taken the 4 pipes in each pipe have taken variouetupes of soil profiles to treat water with an length (120 CM). After treating the waste water the results are calibrated in the table number 1 and table number 2. The results are compared with treated and untreated water, from that treated soil profiles black soil is suitable for using the water for gardening and planting purposes comparison is done in the table no 2 with standard values (Heavy metals test) of waste water sample and black soil. Further research is recommended to optimize system design, operation, and monitoring protocols for widespread implementation of SAT in medical wastewater treatment practices with black soil.*

Keywords: SAT, Vertical Method, Horizontal Method, Medical Wastewater