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SUSTAINABLE REUSE OF HIGH STRENGTH LEACHATE BY TREATMENT USING AEROBIC/ANOXIC PROCESSES

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Leachate originating from landfills poses a significant environmental threat to both the groundwater and surface water. In order to reuse it for irrigation, the leachate has to be collected and treated in a proper way. In this study, leachate samples were collected from a working landfill in Kuwait. Aerobic/anoxic (A/A) biological reactors were used to treat the collected leachate. The analysis of leachate show high solids content and high organic strength as expressed by its biochemical oxygen demand (BOD) and chemical oxygen demand (COD). The maximum COD concentration was 800 mg/l and the maximum total dissolved solids (TDS) concentration was 24000 mg/l. The biological treatment of leachate was efficient for removal of organic compounds. The COD removal efficiency reached a value of 90% within a month. Nitrification rate was higher than dentrification processes. The nintrate concentration in the reactor decreased from a maximum value of 750 mg nitrate-N/L to a minimum of 300 mg nitrate-N/L in 20 days. In general the A/A treatment process has high efficiency in treatment of COD, solids, and ammonia concentrations.

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