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Lab investigation of high strength leachate 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 minimize the negative impact on the environment, 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 BOD and COD. The maximum COD concentration was 800 mg/l and the maximum TDS concentration was 24000 mg/l. The biological treatment of leachate was efficient for the removal of organic compounds. The COD removal efficiency reached a value of 90% within a month. Nitrification rate was higher than denitrification processes. The nitrate 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 the treatment of COD, solids, and ammonia concentrations.

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