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Effects of Alkalinity on the Treatment of Landfill Leachate through Algae Growth

Authors : Tahir Imran Qureshi

Abstract : This study was aimed at finding out effects of potential influence of alkalinity on the treatment of landfill leachate through the growth of algae at varying dilution rates and toxicity potential. pH control proved to be an effective factor influencing on algal growth. With the use of algae Scenedesmus sp. for the treatment of leachate, a sharp increase in the growth of algae was recorded until pH 9. However, at pH 9.3 and 25 °C temperature, the growing trend of algae population showed a weakening tendency with the increase of total alkalinity in the leachate solution. Highest growth of algae was recorded in the leachate samples with alkalinity ranged at 1500-2500 mg CaCO3/L under neutral condition at pH 7 after 48 hours of cultivation time. Under the similar conditions, total nitrogen and total phosphorous in the leachate also reduced to 80% and 85%, respectively, however, no significant removal of COD was observed during the course of experiment.

Keywords : leachate treatment, microalgae, nutrient removal, ammonia toxicity
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