APPLICATION OF BIOROCK FOR DOMESTIC WASTEWATER TREATMENT

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ABSTRACT

Nowadays, there are many types of water treatment system being used throughout the world. The application of biorock wastewater treatment (BWT) is a new alternative method that being developed rapidly. The objective of this study is to investigate the effectiveness of biorock system in improving the quality of domestic wastewater. It is expects that this kind of low cost technology is effective applies for wastewater treatment. The BWT is contributing in reducing pH in wastewater, remove organic matters and improve effluent water quality. The treatment will be carried out on wastewater samples that collected from a Siput River in Segamat, Johor that use biorock treatment. The effluent that enters the biorock will flow through a filter which uses layers of stone fibre and be treating in exactly same way as nature treats effluent in the soil. Bacteria will grow in the stone fibre and digest the organic materials. The effluent has passed through the filter will be discharged as clear and odourless. The parameters that will analyse are showing significant reducing after undergoes the treatment using biorock and will be compared with the parameters from DOE. The results of removal pollutants has shown a significant reductions of Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), turbidity, concentration of nitrate, sulphate and phosphate in the range of 10%, 56%, 25%, 40%, 29% and 21% respectively. It can be concluded that the biorock system is effective to remove and reduce the pollutants that contain in domestic wastewater.
ABSTRAK

Pada masa kini, terdapat pelbagai jenis sistem rawatan air yang digunakan di seluruh dunia. Penggunaan ‘biorock’ dalam rawatan sisa air adalah satu altenatif baru yang sedang berkembang pesat. Objektif kajian ini adalah untuk melihat keberkesaan penggunaan sistem ‘biorock’ dalam meningkatkan kualiti air sisa domestik. Teknologi kos rendah ini dijangka berkesan dalam rawatan sisa air kerana ia mampu mengurangkan kadar pH dalam air sisa, membuang bahan organik dan meningkatkan kualiti air sisa. Rawatan sisa air akan dijalankan ke atas sampel air sisa yang diambil dari sistem perparitan yang menggunakan kaedah rawatan biorock di Segamat, Johor. Air sisa yang memasuki sistem ‘biorock’ akan mengalir melalui penapis yang menggunakan lapisan serat batu dan merawat dengan cara rawatan yang sama untuk merawat air sisa dalam tanah. Bakteria akan membesar di lapisan serat batu dan akan memcerna bahan organik yang terdapat dalam sisa air. Air sisa yang melalui lapisan serat batu akan dilepaskan sebagai air yang bersih dan tidak berbau. Parameter yang akan dianalisis menunjukkan pengurangan yang selepas menjalani rawatan air sisa menggunakan ‘biorock’ dan akan dibandingkan dengan nilai parameter yang telah ditetapkan oleh DOE. Nilai-nilai pengurangan pencemaran dalam air sisa yang diperolehi untuk Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), kekeruhan air, kepekatan nitrat, sulfat dan fosfat adalah 10%, 56%, 25%, 40%, 29% dan 21%. Kesimpulannya, sistem biorock adalah berkesan untuk membuang dan mengurangkan pencemaran dalam air sisa domestik.
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