

Peat Swamp Groundwater Treatment: Efficiency of Mixed Citrus Peel and Kernel Activated Carbon Layer

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Abstract. One of the natural water resources is groundwater. Groundwater is another alternative to meet the increasing water demand in Malaysia. Then, the decrease in supplying raw groundwater which may due to depletion of groundwater and hence it is important to maintain the availability of water supply locally and even establish new water source such as from peat swamp to overcome future water crisis. Activated carbon is famous for its characteristic in eliminating various organic contaminants. In this investigation, low cost mixed activated carbon of food waste (citrus peel) and agricultural waste (palm kernel shell) are used as adsorbents in biological sand filter to treat peat swamp groundwater whereby the overall aim of study to evaluate the performance of mixed activated carbon layer of citrus peel and kernel in biological sand filter for peat swamp groundwater treatment. The mixed activated carbon with 1:1 ratio is filled into the biological sand filter. The efficiency of the mixed activated carbon layered biological sand water treatment system is evaluated using parameters pH, Turbidity, Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD), Total Suspended Solids (TSS) and E. coli and removal of heavy metal ions of peat swamp groundwater. All these parameters follow the Standard Methods for Examination of Water and Wastewater 2005. The implementation of investigation improved the water quality of the peat swamp groundwater, the water treatment technology using combination of activated carbon and biosand filter, human living standards by providing safe and clean water supply.

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