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SOONTAREE SUBHAKORN : MANGANESE REMOVAL FROM  
SYNTHETIC WATER BY RICE HULL ASH FILTER. THESIS ADVISORS :  
CHAOVAYUT PHORNPIMOLTHAPE, M.S.I.E.(Operations Research),  
SUVIT SHUMNUMSIRIVATH, M.S.(Env. & Water Resources Eng.), KRISANA  
TEANKAPRASITH, M.S.(Env. Health), 101 p. ISBN 974-662-295-1

The purpose of this research was to study the efficiency of manganese removal from synthetic water by rice hull ash. The flow rates of synthetic water were 0.5, 1 and 2 gpm/sqft. The two heights of rice hull ash used for the experiment were 30 and 60 cm and concentrations of manganese in synthetic water of 1 and 2 mg/l were tested.

The experimental model consisted of cylindrical filtration columns, 2.5 cm in diameter. Rice hull ash with an effective size of 0.3 mm and uniformity coefficient of 2.6 was employed in the filtration columns at the heights of 30 and 60 cm. The synthetic water used for this experiment had manganese added and adjusted to 1 and 2 mg/l. The flow rates were 0.5 , 1 and 2 gpm/sqft. The experiment was carried out until head loss of the filter reached 95 cm or duration of filter run reached 10 hours. The filtered water was collected every hour during filtration, and residual manganese concentrations were analyzed.

The results show that the efficiency of manganese removal decreased as the flow rates increased. The efficiency of manganese removal was higher with a rice hull ash height of 60 cm than with 30 cm. The efficiency of manganese removal was higher with manganese concentration of 1 mg/l than with 2 mg/l. The highest efficiency, 96.35% of manganese removal, for this study was at manganese concentration of 1 mg/l, rice hull ash height of 60 cm, flow rate of 0.5 gpm/sqft and 7 hours of filtration time. This combination could reduce manganese concentration to within the WHO drinking water standard which allows a maximum manganese content of 0.1 mg/l of water.