



## Effects of temperature and pH on cadmium and lead adsorption by bagasse from a sugar production plant

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Bagasse obtained from a sugar production plant in Suphanburi province was used as an adsorbent for the removal of cadmium (Cd) and lead (Pb) from synthetic wastewater. The particle sizes were between 355 to 500  $\mu\text{m}$ . The objective was to determine the effects of pH and temperature on the Cd and Pb adsorption. Batch-wise experiments were carried out with a metal concentration of 100 mg/L and an adsorbent concentration of 10 g/L. The adsorption uptakes increased from 0 mg/g to 7.86 mg Pb/g and 2.61 mg Cd/g as pH of the solutions increased from 2 to 6. Competitive adsorption of proton and the metal ions was probably responsible for the negligible adsorption of the metal ions at pH of 2. An increase in the temperature from 30 °C to 45 °C did not affect adsorption of Cd and Pb. Adsorption of Cd and Pb were in accordance with the pseudo-second-order kinetic model. In addition, adsorption isotherm of the adsorption was also studied at a temperature of 30 °C by varying metal concentrations from 100 to 800 mg/L. The adsorption could be explained by Langmuir isotherm indicating that the adsorption occurred on a surface of bagasse was monolayer.

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