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Treatment of lead-contaminated water using activated carbon adsorbent  
from locally available papaya peel biowaste

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## Abstract

The performance of activated carbon (AC) produced from papaya peel (PP) as a locally available bioderived adsorbent in the removal of Pb(II) from metal-contaminated water is reported. Utilization of natural biowastes, such as papaya peel, in this way could assist with waste minimization at the same time as providing a new source of activated carbon for wastewater treatment. Lead pollution in water bodies is critical in countries such as Malaysia, yet removal via this locally sourced waste material has not been considered before. Using papaya peel activated carbon (PP-AC) in batch mode, the effects of initial pH (3–7), adsorbent dosage (10–200 mg), initial Pb(II) concentration (10–200 mg/L), contact time (10–180 min) and temperature (25, 35 and 50 °C) were studied separately. The best result was obtained at pH 5, with an adsorbent dosage of 100 mg, Pb(II) ion concentration of 200 mg/L and a contact time of

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