

Removal of heavy metals via adsorption on activated carbon synthesised from solid wastes.

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Abstract:

Dates pits as a huge solid waste in Al – Hassa province, Saudi Arabia, were used to prepare physically and chemically activated carbon. The raw materials were physically activated with steam (CS), while the chemically activated samples were prepared in the presence of zinc chloride (CZ) and phosphoric acid (CA), individually. The textural properties, including surface area, mean pore radius and total pore volume, were determined from the low temperature adsorption of nitrogen at 77 K. FT – IR spectroscopy and base neutralization capacity were used for the description of surface groups. The adsorption of heavy metals as pollutants, including Cu^{2+} , Mn^{2+} , Pb^{2+} , Fe^{3+} and Cd^{2+} was studied in a batch experiments.

The type and amount of used activator had considerable effects on the textural characteristics of investigated samples, i.e. it develops the porosity and therefore changes the textural properties. These changes of textural properties were associated with an excellent removal efficiency, exceeds 90 % and depending on the type of activator.