

ON THE USE OF LOW COST ADSORBENTS FOR THE REMOVAL OF ENDOCRINE DISRUPTORS FROM WATER: A CASE STUDY WITH BISPHENOL A

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Abstract.

The present paper is focused on the use of low cost adsorbents for the removal of endocrine disruptors from water. This class of organic compounds has been recently considered of increasing environmental concern because of the adverse health effects. Among them, bisphenol A (BPA), widely used for the plastic production, is considered as a critical contaminant due to its harmful effects. The adsorption efficiencies of four types of activated carbons, commonly used in the drinking water treatment, on the bisphenol A removal were investigated using batch adsorption experiments. Based on kinetic and mass transfer considerations the activated carbon F400 gives the best results and was selected for further adsorption studies. The obtained results showed that the BPA isotherm experimental data are well described by Freundlich isotherm and demonstrated the excellent performance of the selected adsorbent. Thus, F400 can be considered of a potential practical interest for the BPA pollution control purposes.

Keywords: adsorption, carbonaceous adsorbents, drinking water, endocrine disruptors.

Introduction

According to the US Environmental Protection Agency, endocrine-disrupting compounds (EDCs) are exogenous agents interfering with synthesis, secretion, transport, metabolism, binding action, or elimination of natural blood-borne hormones that are present in the body and are responsible for homeostasis, reproduction, and developmental processes. These agents act through various types of receptors such as nuclear receptors, nonnuclear steroid hormone receptors, nonsteroid receptors, enzymatic pathways involved in steroid biosynthesis and/or metabolism, etc. (Diamanti-Kandarakis et al., 2009).

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