

Adsorption of 17 α -Ethinylestradiol on Activated Carbon Based on Sewage Sludge in Aqueous Medium

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Abstract : Endocrine disruptors are unregulated or not fully regulated compounds, even in the most developed countries, and which can be a danger to the environment and human health. They pass untreated through the secondary stage of conventional wastewater treatment plants, then the effluent from the wastewater treatment plants is discharged into the rivers, upstream and downstream from the drinking water treatment plants that use the same river water as the tributary. Long-term consumption of drinking water containing low concentrations of these compounds can cause health problems; these are persistent in nature and difficult to remove. In this way, research on emerging pollutants is expanding and is fueled by progress in finding the appropriate method for treating wastewater. Adsorption is the most common separation process, it is a simple and low-cost operation, but it is not eco-efficient. Concomitant to this, biosorption arises, which is a subcategory of adsorption where the biosorbent is biomass and which presents numerous advantages when compared to conventional treatment methods, such as low cost, high efficiency, minimization of the use of chemicals, absence of need for additional nutrients, biosorbent regeneration capacity and the biomass used in the production of biosorbents are found in abundance in nature. Thus, the use of alternative materials, such as sewage sludge, for the synthesis of adsorbents has proved to be an economically viable alternative, together with the importance of valuing the generated by-product flows, as well as managing the problem of their correct disposal. In this work, an alternative for the management of sewage sludge is proposed, transforming it into activated carbon and using it in the adsorption process of 17 α -ethinylestradiol.

Keywords : 17 α -ethinylestradiol, adsorption, activated carbon, sewage sludge, micropollutants

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