



Possibilities of using the aspen poplar seeds (*Populus tremula* L.) for the purpose of removing monoaromatic hydrocarbons from an aqueous solution

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Received 2 March 2018; Accepted 19 July 2018

ABSTRACT

Sorption of oil-related products (including mainly the propellants) is the very basic process that counteracts spreading these types of pollution into environment. Plenty of synthetic substances are used as sorbents for binding organic compounds (including the monoaromatic hydrocarbons) both from the surface and underground waters. The aim of this paper is to present results of the research on the possibilities of using the aspen poplar (*Populus tremula* L.) seeds as a sorbent of monoaromatic hydrocarbons from an aqueous solution. In order to increase sorption capacity, the seeds biomass was submitted for the process of mercerizing in diversified time and temperature in water and the NaOH solution. The removal of benzene, toluene, ethylbenzene, *o*-xylene, *m*-xylene, and cumene was carried out by means of the "batch method". All the conducted experiments have shown a high sorption level of the analyzed pollutions from an aqueous solution. The best sorptive qualities appeared in the seeds drenched in water for 15 d (G) and 14.9% more absorbed hydrocarbons in comparison with the control sample and the smallest sorption— seeds drenched in distilled water for an hour in the temperature of 80°C (H). The process of the seeds mercerizing, conducted with the use of hot water, appeared to be cumbersome, but with the use of NaOH it provided positive effects only after 4 h of process. Two-week seeds mercerization in water of a temperature 20°C (G) is actually the most time-consuming, but at the same time absorbs the least amounts of energy and material, therefore is the most effective one too.

Keywords: Sorption; Aspen poplar seeds; Mercerization; Aromatic hydrocarbons; BTEX

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