

VALORIZATION OF LOW-COST NATURAL MATERIALS IN DEPOLLUTION PROCESSES OF WASTEWATER

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Abstract. The adsorption on non-conventional and low-cost materials for removal of toxic heavy metals and oil products from aqueous media has become important in the last years, because is an efficient and cost-effective alternative compared to traditional chemical and physical remediation, and also other decontamination techniques. The good efficiency, minimization of secondary (chemical or biological) wastes and low cost of adsorbent materials, are only few main advantages of adsorption that can be used for the removal of such pollutants in high volumes of aqueous solutions, being thus more adequate for large scale applications. In this paper, are presented the adsorptive characteristics of a low-cost material that are abundant in our region, namely: Romanian peat moss from Poiana Stampei (Romania), for the removal of different toxic heavy metal ions (Pb(II), Hg(II), Co(II) and Ni(II)) and oil products from aqueous media. The experiments have concerned the influence of several experimental parameters (initial solution pH, adsorbent dose, initial heavy metals concentration, contact time, and temperature) on the heavy metals and oil products removal efficiency. The most important conditions for desorption of heavy metal ions from loaded-materials, required for their regeneration are also presented.

Keywords: heavy metals, oils products, low-cost natural materials, peat moss, wastewater treatment.