

EFFICIENCY EVALUATION OF REUSE OF THE WASTE SORBENT OF THE FOOD INDUSTRY FOR THE PURIFICATION OF INDUSTRIAL WASTEWATER FROM COPPER (II) IONS

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Abstract. The scientific paper presents the results of research into the processes of sorption purification of industrial wastewater from copper (II) ions using a sorbent modified with sulphide and hydrosulphide ions. A regenerated mixed sorbent from the food industry was used. The obtained data indicate insignificant adsorption of Cu^{2+} on the surface of the unmodified sorbent, which is explained both by the nature of the adsorbate and the morphology of the adsorbent after its acid-alkaline activation. Sorption of Cu^{2+} ions is mainly carried out by carboxyl groups. Preliminary modification of the sorbent surface with more active sulphide and hydrosulphide ions leads to a significant increase in its selective adsorption in relation to copper (II) ions. It was established that topochemical reactions of formation of copper (II) sulphide CuS and elemental sulphur take place on the surface of the sorbent. The obtained results allow us to recommend the use of pre-regenerated spent industrial sorbent of the food industry for complex wastewater treatment of galvanic and petrochemical industries.

Keywords: spent sorbent, reuse, modification, treatment of galvanic effluents, adsorption.