REMOVAL OF COPPER(II) IONS FROM AQUEOUS SOLUTION BY POLYUREA RESIN

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Heavy metal ions have become an ecotoxicological hazard of prime interest and increasing significance, because of their accumulation in living organisms [1]. Copper pollution arises from copper mining and smelting, brass manufacture, electroplating industries and excessive use of Cu-based agri-chemicals. Copper along with arsenic and mercury, is recognized as the highest relative mammalian toxic and continued inhalation of copper containing sprays is linked with an increase in lung cancer among exposed workers. Copper sulphate is used widely as an algicide in ornamental ponds and even in water supply reservoirs, which are affected by blooms of blue-green algae [2].

Removal of heavy metal pollutants at high concentrations from water can be readily accomplished by chemical precipitation or electrochemical methods. At low concentrations, removal of such pollutants is more effective by ion-exchange or adsorption on solid sorbents [3]. A lot of adsorbents were used to remove Cu(II) ions from wastewater. Some of them is insoluble chelating polymers. Chelating resins are useful substances because of their extraordinary adsorption properties for specific metal ions.

In this study, polyamine-polyurea chelating resin was synthesized. The removal of copper (II) ions from aqueous solutions by adsorption on the chelating resin was investigated depending on pH, adsorbent dosage, contact time and initial metal concentration. The experimental data were analysed by Langmuir and Freundlich isotherms. The results of the experiments show that the resin has high adsorbing capacities for Cu²⁺ ions.

References