


EVALUATING THE METHODS USED FOR THE REGENERATION PROCESS OF COPPER-ZINC SOLUTIONS

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Abstract. The purpose of this study was to investigate the physicochemical particularities of the regeneration processes that occur in spent sulphate copper-zinc solutions using the reagent methods of crystallization, cementation, and sedimentation. The obtained results show that the method of crystallization is easy-to-implement, though it fails to provide a required level of efficiency during the regeneration process in the solution to extract heavy metal ions (the extraction of Cu^{2+} and Zn^{2+} ions was 97.2% and 49.7%, respectively). The displacement (cementation) method does not require additional chemical reagents to implement the stages of processing, the percentage of extraction of Cu^{2+} and Zn^{2+} ions were higher in comparison to crystallization method, 99.9% and 95.4%, respectively. The advantages of the sedimentation method are the high rates of chemical transformations at technological process stages, complete deposition of heavy metal ions from spent electrolytes (99.9%) and the energy saving due to the shortened time of the regeneration process.

Keywords: waste, heavy metal, regeneration, reagent method, treatment efficiency.

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