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## EFFECTIVE METHOD FOR CLEANING OF ORE OF ORE-FERROUS FACTORY FROM IONS OF HEAVY METALS BASED ON BACTERIA ASSOCIATION OF THE GENUS *PSEUDOMONAS*

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**Introduction.** Discharge of sewage, which is pumped out during the work of mining complexes, leads to the contamination of surface water bodies with various toxic chemical pollutants (oil products, heavy metal ions, etc.). Mountain mining leads to an increase in the runoff of mine and mine waters, which carry a significant amount of chloride compounds, sulfuric acid, soluble salts of iron, manganese, copper, etc. Particularly dangerous are the heavy metal ions Pb, Cd, Mo, Ni, Zn, As, which enter the environment with mine waters and run-off from ore-processing plants. The aim of the work is the development of an environmentally safe method for purification of ore-dressing plants effluents from heavy metal ions on the basis of the association of non-pathogenic bacterial strains of the genus *Pseudomonas*.

**Methods.** The content of heavy metal ions in aqueous solutions before and after microbiological purification was determined by the atomic absorption method on a flame atomic absorption spectrophotometer Saturn in the flame of an air-propane-butane mixture. The effectiveness of the proposed microbiological method is estimated by the degree of extraction from the cations of heavy metals [Pb (II), Cd (II), Zn (II)].

**Results.** For the first time, cells of non-pathogenic strains of *P. fluorescens* ONU328, *P. malto-*

*philia* ONU329, *P. cepacia* ONU327 were proposed as part of the bioflocculant for the effective and ecologically safe treatment of run-off plants. The degree of extraction of Pb (II), Cd (II), Zn (II) from concentrated solutions reached 93.00-99.85% with their residual content in solution (0.03-4.9) mg/dm<sup>3</sup>. The use of strains of *P. fluorescens* ONU328, *P. maltophilia* ONU329, *P. cepacia* ONU327 (1:1:1 in volume ratio) in the developed association method provides the greatest efficacy.

**Discussion.** When processing technogenic solutions with immobilized bacterial cells in the composition of bioflocula, the residual concentration of Pb (II), Cd (II), Zn (II) was within 0.02-0.1 mg/dm<sup>3</sup> that is much lower than their maximum allowable concentration for discharge cleaned solutions into the sewage system.

**Conclusions.** The non-pathogenic strains of the bacterium of the genus *Pseudomonas* possess a broad biochemical potential of biotechnological purpose – sorption-accumulating relative to ions of heavy metals and destructive for hydrocarbons of oil, which opens wide prospects for their use in biotechnology of cleaning the environment from pollutants of various nature.