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Deep purification of the polluted waters from copper ions

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The task of cleaning polluted natural and sewage from ions of heavy and non-ferrous metals has big importance in connection with escalating environmental pollution by the industrial enterprises. The problem of pollution of reservoirs by copper ions is especially urgent. It is connected with the fact that concentration of ions of copper in the waters dumped into rivers and natural reservoirs in most cases should not exceed maximum allowable concentration for rivers and reservoirs of fishery value. For example, according to the regulatory documents accepted in Russia, the concentration of copper in wastewater discharged into such rivers and natural reservoirs must not exceed 1 μg/dm^3. While residual concentration of ions of copper after their cleaning by lime application at pH=8-9 usually is in sewage at the level of 100-200 μg/dm^3. Therefore, it is necessary to apply additional methods of their processing to achievement of the required depth of purification of the polluted waters. One of the cheapest ways of such processing is finishing sorption tertiary treatment of sewage. We developed technology of deep sorption purification of the polluted waters of copper ions with use of Russians sorbents. It allows to purify waters to residual concentration of copper ions in them about 1 μg/l that corresponds to maximum allowable concentration for reservoirs of fishery use. The technology is checked on model solution, and also on sewage of one of combined heat and power plant of Chelyabinsk region where concentration of ions of copper before cleaning made 192 μg/l, and after sorption cleaning on our technology - less than 1 μg/l. For realization of this technology the standard equipment of water purification can be used: settlers, filters, etc.

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