

USE OF CARBON SORBENTS FOR WASTE WATER PURIFICATION

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One of the problems arising during mining is coal production waste. Of particular value are the coals of the Shubarkol field, where besides the extraction of high-quality coal fuel, it is possible to create a large fuel and energy complex.

In the laboratory of coal chemistry of the Institute of Organic Synthesis and Coal Chemistry of the Republic of Kazakhstan, research is currently underway on the processing of off-balance coals of the Kazakhstan deposit.

Purpose of the work: purification of natural waters from heavy metals and reduction of the total hardness of water. As the investigated object, the water of the irrigation canal, waste water from rice pouches and extracts from the soil of Kyzylorda were taken. For the purification of wastewater, a sorbent developed at LLP "Institute of Organic Synthesis and Coal Chemistry of the Republic of Kazakhstan" was used. Sorbent is obtained from oxidized off-balance coals of the Shubarkol field. The process was carried out at room temperature for 20 minutes with slow stirring. The sediment was in a suspended state, and the resulting flakes did not degrade. The effluents are purified by simultaneous treatment with an aqueous solution of humic acids and coagulants. Humic acid is supplied in an amount necessary to bind the heavy metal ions present in the water and varies within 1-3 kg / t. Excess leads to a decrease in the efficiency of chemical treatment. The proposed technology allows to carry out the process of water purification in a continuous mode at high removal efficiency of heavy metals and reduction of the total hardness of water to 2.8 meq / l, pH <10 [1].

The results of the analysis confirm that with our method the degree of water purification is reached to the norm of San. P and N. Consequently, as a result of the use of coal sorbent, the water hardness and the sulfate content decreases by 15 – 27% in the water of the irrigation canal, the discharge water from the rice pouches and the extract from the soil of Kyzylorda is practically reduced. Thus, the problem of environmental pollution of sulfate salts contained in the waste waters of rice pouches can be solved as a result of the use of humic preparations of a new generation.

References:

1. MAMRAYEVA, K.M. 2015. Technology of processing of Shubarkol coals for the purpose of obtaining chemical products. In: International Scientific Practical conf. «Chemistry and metallurgy of complex processing of mineral raw materials», Karaganda, pp.669 – 675.