THE INFLUENCE OF NITRATE ON THE PHOSPHATE REMOVAL RATE FROM WASTEWATER IN ACTIVATED SLUDGE TREATMENT PROCESS.

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The aim of the research was to determine the degree of influence of nitrate
wastewater concentration on the process of removal of phosphorus compounds by sequential water treatment in anoxic and aerobic conditions in an activated sludge system. Model wastewater solutions were used for research with following parameter: biochemical oxygen demand for 20 days –200 mgO₂/l; phosphate concentrations – 11.87–12.38 mg/l; nitrate concentrations – 21.0; 36.0 and 48.0 mg/l. Activated sludge was added to them with content in solutions 2.2 mgO₂/l to provide biological processes. For simulation of the biological process of dephosphotation in wastewater with usage of activated sludge in sequentially formed anoxic and aerobic conditions, a model sequential reactor – SBR reactor – was used. As the results show, with the increase in the concentration of nitrates at the inlet from 21.0 to 48.0 mg/l, the phosphate concentration in the treated solutions at the outlet from the bioreactor increases by 7.3%. Thus, from the work presented here, it can be concluded that for successful and effective implementation of the dephosphotation process the elimination of the nitrate present in wastewater is required. It is reasonable to separate processes of denitrification and dephosphotation in separate structures with the provision of minimal nitrate influence on the phosphorus removal from wastewater.

**Key words:** phosphate, nitrate activated sludge, wastewater.

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