



IMPACT OF ACCELERATED ELECTRONS ON ACTIVATING PROCESS AND FOAMING POTENTIAL OF SLUDGE

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Presently, anaerobic and/or aerobic biological treatment is the cheapest and the most effective method of wastewater and sludge processing. However, due to some non-biodegradable substances present in wastewater and also due to limited capacity of wastewater treatment plants, it is necessary to find effective processes, that would be complementary to existing sludge treatment methods. Beside chemical and physical processes, radiation technology seems to offer improvement of effectivity of biological treatment.

The paper describes possibilities of irradiation in activating process. Activated sludge can be affected in all its parameters, including physico chemical properties, such as sedimentation rate, or resulting volume of sludge. For the purpose of this research, laboratory experimental reactors simulating activating process were operated. According to previous results, accelerated electrons were used for irradiation, for e-beam seems to be more expedient than gamma irradiation. Reactor with irradiated sludge has been compared with the one without irradiation. It is shown, that pre-irradiation of sludge can positively affect following process of activation.

Beside the activating process, another goal has been pursued. Radiation can strongly affect sludge foaming potential. Biological foaming caused by surfactant microorganisms, represents quite serious problem in many wastewater treatment plants, especially in digesters. It was proved that after irradiation foaming potential of sludge decreases.

Pre-irradiation of activated sludge with relatively low doses also results in reduction of number of pathogenic microorganisms, presented in sludge.