KINETICS OF DAIRY WASTEWATER TREATMENT IN THE SBR SYSTEM

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Abstract: There are two kinds of wastewater that may originate at a dairy plant: post-production and non-production waste. Dairy wastewater treatment is a process consisting of several stages. In the pre-treatment stage, fat and sand is removed from wastewater. The second stage treatment consists mainly in aerobic treatment with activated sludge, advanced oxidation methods and an anaerobic treatment. In recent years, more and more plants have been treating their wastewater in SBR type reactors, because they are flexible at work and enable the user to change conditions to suit the variable quality of raw wastewater. The research on the kinetics of the wastewater treatment process in an SBR reactor has been conducted. The removal of several factors such as nitrogen compounds, TOC, phosphorus and the kinetics of oxygen concentration and redox potential have been analyzed. The experiment was carried out in two 12 dm^3 volume SBR reactors in a lab-scale. The SBR reactors were operated with a cycle time of 12 hours with three hours of filling, seven hours of aeration, an hour of sedimentation, half an hour of decantation and half an hour of technical break. In presented research average parameters of raw wastewater were: TOC 329 mg C/dm^3, ammonium nitrogen 11.15 mg N_{NH4}/dm^3, and total phosphorus 15.42 mg P/dm^3.