

A STUDY OF THE CONDITIONS FOR ANAEROBIC FERMENTATION OF WASTEWATER FROM WINE-PRODUCING ENTERPRISES IN A UASB-TYPE REACTOR

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Abstract. The possibility of using anaerobic methanogenic digestion for the comprehensive treatment of wastewater from primary wine production facilities, whilst simultaneously producing energy-rich biogas, has been investigated. An analysis was carried out of the chemical composition of the wastewater, which is characterised by high COD and BOD values and a significant organic content. Based on experimental studies, ranges of process parameters were established under which the methanogenesis process is characterised by maximum efficiency: temperature 40°C, pH 6.5–7.5, and a C:N ratio within the range of 20:1–100:1. The maximum COD reduction efficiency was 92%, and the biogas production was 5.65 L/day with a methane content of 67%. A process flow diagram for wastewater treatment using the methanogenesis method is proposed, which allows for the simultaneous reduction of pollution levels, production of biogas and organic fertilisers.

Keywords: wine production wastewater, anaerobic digestion, biogas, COD, UASB reactor.