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THE INFLUENCE OF ULTRASONIC FIELD ON CHEMICAL AND MICROBIOLOGICAL PARAMETERS OF STABILIZED EXCESSIVE SLUDGE

ABSTRACT *Anaerobic stabilization is one of the processes applied in modification of sewage sludge. That process is based on biochemical decomposition of macromolecular compounds in participation of suitable microbes. Usage of conditioning technology for sewage sludge before anaerobic stabilization leads to time reduction of that process.*
The investigations were done on excessive sludge coming from Central Wastewater Treatment Plant "Warta" S.A. in Częstochowa. Due to fact, that excessive sludge has structure consists of agglomeration of microbes cell it is unsusceptible for anaerobic stabilization. Active ultrasonic field application causes decomposition of microbes cells membranes and release of organic compounds from their interiors. This process increases the effectiveness of anaerobic stabilization.

Process of anaerobic stabilization was carried out for 28 days in temperature of 37℃. First sample of excessive sludge was stabilized without conditioning, second sample was stabilized after conditioning in specified parameters of active ultrasonic field.

During anaerobic stabilization the following chemical analysis were done: dry matter, mineral dry matter, organic dry matter, volatile fatty acids (VFA), pH, alkalinity, acidity, Kjeldahl general nitrogen, ammonium nitrogen, chemical oxygen demand (COD), general phosphorus. Additionally, microbiological tests of microbes of Escherichia coli, psychrophiles and mezophiles microorganisms were done.

Keywords: *excessive sludge, anaerobic stabilization, ultrasonic field, biogas, microorganisms.*