

The Influence of Fenton Reaction on the Excess Sludge Sanitation – Marcin Dębowski, Mirosław Krzemieniewski

Summary

Fenton reaction was investigated for its potential to improve the sanitary effects of the excess sludge from wastewater treatment plants. The investigations were conducted in three phases, on laboratory-scale experimental stands. The importance of Fenton's reagents doses, ferrous sulphate and hydrogen peroxide doses as independent agents influencing the technological effects were determined. Microbial analysis concentrated on *coli* form bacteria, faecal *coli* form bacteria, anaerobic endosporous form of *Clostridium perfringens* and microorganisms of *Salmonella* genus. In activated sludge not exposed to chemical treatment, the number of *coli* form bacteria was approximately on the level of $4.7 \cdot 10^6$ MPN/g d.m., faecal *coli* forms $3.2 \cdot 10^6$ MPN/g d.m., however, anaerobic endosporous form of *Clostridium perfringens* was on the level of $1.2 \cdot 10^4$ CFU/g d.m. *Salmonella* microorganisms were present. The most effective method to improve the sanitary effects of the excess sludge was advanced oxidation process (AOP). The best results revealed that the number of *coli* forms was reduced to $6.2 \cdot 10^1$ MPN/g d.m. and anaerobic forms to $4.9 \cdot 10^1$ CFU/g d.m. *Salmonella* did not appear in the sludge. The efficiency of the presented method depended directly on chemical reagent doses.