

## **Study on Pre-Cleaning of Post Production Wastewater Containing Organic Glue by the Process of Coagulation with the Use of Calcium Hydroxide – Barbara Juraszka, Tadeusz Piecuch**

### **Summary**

Presented are the results of laboratory research into one node of a technological setup involving the pre-treatment of wastewaters whose dominant components are adhesive or hardener residues. The work concerned coagulation with calcium hydroxide  $\text{Ca}(\text{OH})_2$ , as well as gravitational sedimentation. The influence of doses of coagulant, sedimentation time and the initial concentration of pollutants on the effectiveness of the process was assessed. The use of calcium hydroxide coagulation allowed for a c. 85% removal in the concentration of digestion-resistant organic substances expressed in terms of COD (at an initial concentration of  $45850 \text{ mg O}_2/\text{dm}^3$ ), as well as 80% removal in the concentration of organic carbon where the initial value was  $18200 \text{ mg C}/\text{dm}^3$ . The process conditions considered optimal were a dose of  $\text{Ca}(\text{OH})_2$  equal to  $0.6 \text{ g}/\text{dm}^3$ , as well as sedimentation time  $t_s$  of 2 hours. The values for pollution indicators in the post-coagulation wastewaters are closely dependent on the initial concentrations in wastewaters, albeit with this relationship (decline) being linear. It is proposed that, following coagulation and gravitational sedimentation, wastewaters should be further treated in consecutive nodes, i.e. by way of gravitational filtration and sorption. The results obtained provided for the defining (using the central point method) of analytical/empirical equations by which to describe the influence of the independent parameters on the values of resulting parameters. In order to verify these equations, several additional experiments were carried out with randomly-selected values for the different variables X1, X2 and X3, albeit with these lying within the range studied previously. They were furthermore chosen in such a way that they would not be associated with the central point of the approximation, but rather with the space around that point, and hence that within which the obtained equations were deemed applicable.