

Szlachta, M., Adamski, W. Assessing the Efficiency of Natural Organic Matter (NOM) Removal from Water by Coagulation. *Ochrona Srodowiska* 2008, Vol. 30, No. 3, pp. 9–13.

Abstract: In this study, the efficiency of the coagulation process in removing organic substances from natural water was related to the pH at which the process was conducted and to the quantity of the coagulant applied. The experiments have produced the following findings. The application of an acidic pH prior to the process resulted in a higher removal efficiency at a lower coagulant dose than when coagulation was performed at a natural water pH. When coagulation was carried out at a higher pH ($\text{pH}_0 \approx 6.5$), this was concomitant with a higher stability of the colloids and a lower efficiency of the water treatment process (measured in terms of color, UV absorbance ($\lambda=254$ nm) and DOC). The increase in the coagulant dose noticeably raised the extent of NOM removal; it should, however, be noted that within the range of the coagulant doses applied the DOC fractions with a high content of aromatic compounds (and consequently with a high potential of generating disinfection by-products) were removed with a higher efficiency. The differences in the distributions of the NOM molecular weights between raw water samples and the samples treated by coagulation have substantiated the significant contribution of this process to the removal of the high-molecular-weight NOM (>2.2 kDa) (approx. 62%); in the case of low-molecular-weight NOM (<1.6 kDa), the efficiency of removal by coagulation was found to be substantially lower (approx. 10%).

Keywords: Water treatment, coagulation, natural organic matter (NOM), molecular weight.