

**Klos, M., Guminska, J. Optimizing the Coagulant Dose for Surface Water Treatment by Means of Particle Number Measurement. *Ochrona Srodowiska* 2009, Vol. 31, No. 3, pp. 25–28.**

**Abstract:** The standard procedures commonly used for the determination of the optimal coagulant dose involve the well-tried jar test method. To assess the efficiency of the coagulant, it is conventional to use the following water quality parameters: turbidity, color, UV absorbance and residual coagulant concentration. However, regardless of whether use is made of the hydrolyzing or of the frequently preferred pre-hydrolyzed coagulant, their doses determined according to water quality criteria can not be regarded as optimal in every instance. In the present study the jar test method was analyzed for reliability when used for determining the optimal dose of the coagulant (both hydrolyzing and pre-hydrolyzed) on the basis of particle number measurement. The results have demonstrated that the mechanism governing the performance of both the coagulant types depended primarily on the content of the polymerized aluminum forms. As the degree of polymerization increased, so did the capacity of the coagulants for neutralizing the electrokinetic potential of the pollutants that were present in the water being treated. This is what enabled a reduction of the coagulant dose required for the removal of colloids and suspended solids. The doses required for efficient removal were substantially lower when the coagulant contained a higher proportion of polymerized aluminum forms than when use was made of the hydrolyzed reagent. The exact value of the dose depended on whether the optimization of the coagulation process was aimed at the removal of suspended solids or at NOM removal.

**Keywords:** Coagulation, prehydrolyzed coagulant, particle counter.