

**Guminska, J. Effect of Coagulation Floc Rupture During Flocculation on the Efficiency of Natural Organic Matter Removal from Water. *Ochrona Srodowiska* 2009, Vol. 31, No. 2, pp. 31–34.**

**Abstract:** The flocs that form in the course of the coagulation process during humic substance removal from water may differ in propensity to sedimentation and filtration. The structure of the flocs depends on the coagulation mechanism involved, which accounts for their diverse strength and reagglomerating capacity. The consequences of floc rupture in the flocculation tank were analyzed. Consideration was given to the contribution of both the pH of the water (5.3 to 5.5 and 7.0 to 7.2) and the moment of floc rupture (after 5 min, 15 min and 25 min from the onset of flocculation). Attempts were also made to determine the propensity of the NOM to removal *via* charge neutralization and *via* sweeping coagulation. Taking into account the whole period within which flocculation occurred, it was found that the flocs that had formed according to the mechanism of sweeping coagulation were less sensitive to the impact of rupture during flocculation as compared to the flocs originating in the course of coagulation where charge neutralization was the dominating mechanism. The properties of the flocs (including their reagglomerating capacity upon rupture) had a substantial effect on the quality of treated water, particularly when rupture occurred at the final stage of flocculation. When the flocs were made subject to sedimentation immediately after rupture, the quality of treated water was found to be higher when flocculation occurred within the lower pH range. This finding is of particular practical importance in the case of coagulation floc rupture during passage to the settling tank.

**Keywords:** Natural organic substances (NOM), coagulation, flocculation, floc rupture, reagglomeration, floc strength.