

Optimizing coagulant demand by nephelometric turbidimeter monitoring system (NTMS)

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ABSTRACT

In a water treatment plant, the dosage control of coagulants depends generally on the results from Jar tests. Improper coagulant and dosages may lead to an inefficient operation and may increase the quantity of chemical sludge. In this research, a nephelometric turbidimeter coupled with a data acquisition unit was used to measure turbidity every second in jar tests. The standard deviation (SD) of the measured turbidity values was proportional to the square root of the floc size. In addition, the image analysis (Matrox Inspector V2.2) used to measure the mean floc size confirmed whether nephelometric turbidimeter monitoring system (NTMS) is suitable for directly applying to floc size analysis in jar tests. The results indicated that the standard deviations (SD) of the turbidities during the flocculation (slow mixing) period of jar tests really can provide direct information for the floc size formation. In addition, this on-line monitoring technique can be a simple and effective indicator to select an optimal coagulation dosage for a flocculation process.

Keywords: Nephelometric; Turbidity; Floc size; Standard deviation

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