



Study on the impact of particle size distribution on turbidity in water

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ABSTRACT

To better understand the impact of particle size distribution on water turbidity, a series of flocculation tests were carried out at different slow stirring speeds to produce the experimental data needed. Results were obtained using an online turbidimeter, coupled with an online particle counter, and all the measurements were performed at regular intervals. It was found that within the turbidity range of 0–40 NTU, particle amount increased linearly with increasing turbidity, whereas for the range of 40–100 NTU, particle amount remained almost unchanged and the correlation between particle amount and turbidity became poor, possibly due to the fact that particles in different size ranges contributed differently to the change of turbidity. The results also demonstrated that particles larger than 5 μm were greatly related to water turbidity, but for particles smaller than 5 μm , a poor correlation between the number of particles and turbidity was found. Therefore, the number of particles smaller than 5 μm should be particularly measured and controlled during water treatment processes to produce maximum removal of particles from water. As expected, the particle counter can be used as a useful supplement to the turbidimeter, in order to effectively evaluate water treatment efficiency and ensure water safety.

Keywords: Flocculation; Particle size distribution; Turbidity; Small particle; Particle counter

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