



SPECTROPHOTOMETRIC PARAMETERS FOR ORGANIC MATTER CHARACTERIZATION IN RAW AND TREATED SURFACE WATER

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Abstract

This study aimed to assess the coagulation performance using simple aluminum sulfate (Alum) and pre-hydrolyzed polyaluminum chloride (PACl) coagulation agents by conventional global parameters, i.e., turbidity and organic matter expressed by total organic carbon (TOC) and chemical oxygen demand (COD), and non-conventional spectrophotometric parameters.

Non-conventional spectrophotometric parameters, expressed as absorbance recorded at different wavelengths, i.e., A₂₅₄, A₂₈₀, A₃₆₅, allowed distinguishing some components classes with different degrees of activation, which are parts of natural organic matter (NOM) from drinking water. Monitoring the A₂₅₄/A₂₈₀ ratio in coagulation stage allowed determining the removal efficiency of some undesirable humic compounds with increased activity, which exhibited the trihalomethanes (THMs) formation potential during disinfection stage. Monitoring the A₂₅₄/A₃₆₅ ratio in coagulation stage allowed determining the removal efficiency of some undesirable humic compounds with hydrophobic character. All experimental results showed that the specific absorbance (SUVA) parameter expressed as the ratio between A₂₅₄ and dissolved organic carbon (DOC), can be used successfully to characterize NOM from raw water and predicts DOC removal in coagulation step. The correlation between conventional and non-conventional parameters showed a better performance of coagulation performance using PACl in comparison with Alum coagulation agent.

Key words: coagulation, drinking water, natural organic matter, SUVA, UV absorbance

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