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The combined treatment of bisphenol A (BPA) by coagulation/flocculation (C/F) process and UV irradiation in aqueous solutions

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ABSTRACT

The coagulation characteristics of bisphenol A (BPA) with polyaluminum chloride (PACl) as a coagulant and the influence of UV irradiation as a complementary process were investigated. The influences of various coagulation parameters such as coagulant dose, pH, solution turbidity, and initial BPA concentrations were analyzed. The possible dominate mechanisms, formation, and performance of flocs over coagulation process were discussed. A coagulant dose of 17.5 mg/L was chosen as optimum dosage. Compared with other ranges of the pH, it can be seen that pH 8 was more effective. It was indicated that turbidity 16 NTU and BPA initial concentration 0.25 mg/L were as optimum conditions in the coagulation process. In this study, elimination mechanism of BPA included colloids entrapment and sweep flocs, predominantly. The results showed that the contact time of UV irradiation was an important factor in the removal efficiency of the BPA residual supernatant. The combination of C/F followed by UV irradiation showed an efficient removal method for treatment of water solutions containing BPA.

Keywords: Bisphenol A (BPA); Coagulation; Flocculation; UV irradiation; Water solution

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