Degradation of bisphenol A by UV/H$_2$O$_2$ oxidation in aqueous solution containing nitrate and alkalinity

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**ABSTRACT**

The goal of the present study was to investigate the effect of nitrate and bicarbonate on the removal of bisphenol A (BPA) by conducting bench-scale UV/H$_2$O$_2$ operations under a variety of reaction time and initial concentrations of H$_2$O$_2$, NO$_3$-N and HCO$_3$$. Although 100% removal efficiency of BPA was observed in 2 min in the absence of HCO$_3$$, only 76.4 and 67.0% removal was achieved in the presence of 65 and 159 mg L$^{-1}$ HCO$_3$$, respectively. In the presence of 5 mg L$^{-1}$ of NO$_3$-N and 65 mg L$^{-1}$ of HCO$_3$$, the BPA removal efficiency was 87 and 76.5%, respectively. In the presence of both NO$_3$ and HCO$_3$, 51.2% of BPA was removed. It was reduced to approximately 50% less than both are absent. The efficiency of BPA removal depends not only on nitrate but also on bicarbonate in aqueous solution. The scavenging effect of bicarbonate was more noticeable than nitrate. The effect was about 33% under same conducted test conditions. The scavenging effect on BPA removal was largest when there were both nitrate and bicarbonate in aqueous solution. The efficiency of BPA was almost halved by them.

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