

The effect of bromide ion on the formation of organic disinfection by-products during ozonation

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摘要.

Abstract

Ozonation of water containing bromide ion (Br⁻) leads to the formation of brominated disinfection byproducts (DBPs). The purpose of this study was to examine the influence of bromide ion upon the distribution and variation of organohalogen DBPs. Bromide ion concentration had a negative effect on chloroform formation as opposed to increased formation of brominated trihalomethanes (THMs). The results of factor analysis lead clearly to the interpretation that the bromide ion was strongly correlated with brominated THMs and less strongly with brominated HANs (haloacetonitriles). Compared to THMs and HANs, brominated HAAs (haloacetic acids) demonstrated a relatively weak correlation to bromide ion concentration. The addition of alkalinity enhanced the formation of chloroform when ozonation time was 10 to 30 minutes, while concentrations of other bromide ion-containing THMs decreased with increasing alkalinity.