Removal of Model Organic Precursors by coagulation

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摘要

Abstract

Low-molecular-weight organics, i.e., phloroglucinol P, resorcinol R, and p-hydroxybenzoic acid PHBA, were selected as the target compounds to evaluate their removal and precursor reduction efficiency by coagulation under the presence of high-molecularweight compounds. The results of this investigation reveal that turbidity removal efficiencies can achieve 95% and above, but the total organic carbon removal for P, R, and PHBA are not remarkable, which are less than 20%. The chlorine demand after 168 hour is:

P PHBA R humic acids HA tannic acid TA; while the order of trihalomethanes THM formation is R P PHBA HA

TA, which is strictly dependent upon the nature of the model compounds. By applying the developed dissolved organic carbon DOC removal model, both the maximum adsorption capacity and the residual DOC can be well predicted after coagulation. In this developed model, the adsorption capacity a is a function of the sorbable part of organic compounds fsorbable, which can be expressed as:

a=e2.67fsorbable, both shown in nature and synthetic water samples. The fnonsorb increased as the molecular weight MW of the target compounds decreased, suggesting that low-MW target compounds could not be easily adsorbed on the flocs.