Desalination and Water Treatment
www.deswater.com

47 (2012) 157–162
September

doi: 10.1080/19443994.2012.696804

Taylor & Francis
Taylor & Francis Group

The bromamine acid removal from aqueous solution using electro-Fenton and Fenton systems

Mingming Gao[a,*], Guohui Zhang[a], Xinhua Wang[a], Fenglin Yang[b]

[a]*Shandong Provincial Key Laboratory of Water Pollution Control and Resource Reuse, School of Environmental Science and Engineering, Shandong University, Jinan 250100 China*
Tel. +86 531 88362220; Fax: +86 531 88364513; email: mmgao@sdu.edu.cn
[b]*School of Environmental Science and Technology, Dalian University of Technology, Dalian 116024, China*

Received 14 October 2011; Accepted 6 March 2012

ABSTRACT

The bromamine acid (BA) removal is investigated in the electro-Fenton and Fenton systems. The BA is an important dye intermediate with difficult biodegradation. So removing BA with advanced oxidation processes may provide common information on anthraquinone dye wastewater treatment. BA has a typical quinonoid structure. It means that the degradation of BA may be coupled with a series of quinone–hydroquinone conversion reactions in these two systems. As a result, two distinct degradation processes for BA are shown in the electro-Fenton and Fenton systems. For a Fenton system, the BA degradation is divided into two phases: the BA quickly transforms into a hydroquinone structure (BAH) in the first few minutes probably due to the formation of a ternary HQ–Fe–H_2O_2 complex, and then the BAH is oxidized by the $^{\bullet}OH$; While, in the electro-Fenton system, the BAH is not accumulated during its degradation. Fenton reaction is the main reaction in the electro-Fenton system.

Keywords: Electro-Fenton; Fenton; Bromamine acid; Degradation

*Corresponding author.

Challenges in Environmental Science and Engineering, CESE 2011 25–30 September 2011, Tainan City, Taiwan