Desalination and Water Treatment
www.deswater.com
25 (2011) 170–175
January
1944-3994 / 1944-3986 © 2011 Desalination Publications. All rights reserved.
doi: 10.5004/dwt.2011.1603

Recycle of alum sludge with PAC (RASP) for drinking water treatment

Lu Qi[a]*, Rong Cheng[a], Hong-chen Wang[a], Xiang Zheng[a], Guang-ming Zhang[b], Gui-bai Li[b]
[a]*School of Environment & Natural Resources, Renmin University of China, Beijing 100872, China*
Tel. +86 (451) 86284452; Fax +86 (451) 86282732; email: qilu926@126.com
[b]*State Key Laboratory of Urban Water Resource and Environment, Harbin Institute of Technology, Harbin 150090, China*

Received 20 October 2009; Accepted in revised form 19 July 2010

ABSTRACT

In this paper, a novel process of recycling alum sludge with powdered active carbon (PAC) was evaluated for drinking water treatment under various conditions. Results of this study indicated that the removal of turbidity, DOC and UV_{254} from simulated raw water by recycling alum sludge with PAC could reach up to 89.2%, 52.7% and 60.1%, respectively, which were better than that of recycling alum sludge alone, and it may be due to the adsorption of PAC which existed in mixed sludge. Turbidity of raw water had an important impact on the recycle of alum sludge with the PAC process, which is better to be applied in treating raw water with turbidity less than 100 NTU. In addition, the optimal pH for humic acid removal by recycling alum sludge with PAC was approximately 5. It was postulated that combination of adsorption and sweeping by hydroxide precipitates and the adsorption of PAC existing in mixed sludge played a key role in the enhancement of turbidity and organic matter removal.

Keywords: Recycle; Alum sludge; PAC; Adsorption; Organic matters removal; Drinking water treatment

* Corresponding author.