

Accepted Manuscript

Improving dewaterability of waste activated sludge by combined conditioning with zero-valent iron and hydrogen peroxide

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PII: S0960-8524(14)01421-7
DOI: <http://dx.doi.org/10.1016/j.biortech.2014.10.009>
Reference: BITE 14052

To appear in: *Bioresource Technology*

Received Date: 14 August 2014
Revised Date: 28 September 2014
Accepted Date: 1 October 2014

Please cite this article as: Zhou, X., Wang, Q., Jiang, G., Zhang, X., Yuan, Z., Improving dewaterability of waste activated sludge by combined conditioning with zero-valent iron and hydrogen peroxide, *Bioresource Technology* (2014), doi: <http://dx.doi.org/10.1016/j.biortech.2014.10.009>

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12

13 **Abstract**

14 Improvement of sludge dewaterability is crucial for reducing the costs of sludge
15 disposal in wastewater treatment plants. This study presents a novel method based on
16 combined conditioning with zero-valent iron (ZVI) and hydrogen peroxide (HP) at pH
17 2.0 to improve dewaterability of a full-scale waste activated sludge (WAS). The
18 combination of ZVI (0-750 mg/L) and HP (0-750 mg/L) at pH 2.0 substantially
19 improved the WAS dewaterability due to Fenton-like reactions. The highest
20 improvement in WAS dewaterability was attained at 500 mg ZVI/L and 250 mg HP/L,
21 when the capillary suction time of the WAS was reduced by approximately 50%.
22 Particle size distribution indicated that the sludge flocs were decomposed after
23 conditioning. Economic analysis showed that combined conditioning with ZVI and
24 HP was a more economically favorable method for improving WAS dewaterability

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