

# Accepted Manuscript

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PII: S0043-1354(18)30725-5

DOI: [10.1016/j.watres.2018.09.021](https://doi.org/10.1016/j.watres.2018.09.021)

Reference: WR 14071

To appear in: *Water Research*

Received Date: 24 July 2018

Revised Date: 4 September 2018

Accepted Date: 5 September 2018

Please cite this article as: Rebosura Jr., M., Salehin, S., Pikaar, I., Sun, X., Keller, J., Sharma, K., Yuan, Z., A comprehensive laboratory assessment of the effects of sewer-dosed iron salts on wastewater treatment processes, *Water Research* (2018), doi: 10.1016/j.watres.2018.09.021.

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# **A comprehensive laboratory assessment of the effects of sewer-dosed iron salts on wastewater treatment processes**

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## **Abstract**

The effect of iron-dosing in the sewer system, on wastewater treatment processes, was investigated using laboratory-scale wastewater systems comprising sewers, wastewater treatment reactors, sludge thickeners, and anaerobic sludge digesters. Two systems, fed with real domestic wastewater, were operated for over a year. The experimental system received ferric chloride ( $\text{FeCl}_3$ ) dosing at  $10 \text{ mgFe L}^{-1}$  in the sewer reactor whereas the control system received none. Wastewater, sludge and biogas were extensively sampled, and analysed for relevant parameters. The  $\text{FeCl}_3$ -dosed experimental system displayed a decreased sulfide concentration (by  $4.3 \pm 0.5 \text{ mgS L}^{-1}$ ) in sewer effluent, decreased phosphate concentration (by  $4.7 \pm 0.5 \text{ mgP L}^{-1}$ ) in biological treatment reactor effluent, and decreased hydrogen sulfide concentration in biogas ( $911.5 \pm 189.9 \text{ ppm}$  to  $130.0 \pm 5.9 \text{ ppm}$ ), as compared with the control system. The biological nitrogen removal performance of the treatment reactor, and

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