

## Accepted Manuscript

Chemical, Microbial and Toxicological Assessment of Wastewater Treatment Plant Effluents during Disinfection by Ozonation

Deniz Nasuhoglu, Siavash Isazadeh, Paul Westlund, Sarah Neamatallah, Viviane Yargeau

PII: S1385-8947(18)30586-2  
DOI: <https://doi.org/10.1016/j.cej.2018.04.037>  
Reference: CEJ 18837

To appear in: *Chemical Engineering Journal*

Received Date: 23 January 2018  
Revised Date: 3 April 2018  
Accepted Date: 5 April 2018

Please cite this article as: D. Nasuhoglu, S. Isazadeh, P. Westlund, S. Neamatallah, V. Yargeau, Chemical, Microbial and Toxicological Assessment of Wastewater Treatment Plant Effluents during Disinfection by Ozonation, *Chemical Engineering Journal* (2018), doi: <https://doi.org/10.1016/j.cej.2018.04.037>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



## Chemical, Microbial and Toxicological Assessment of Wastewater Treatment Plant

### Effluents during Disinfection by Ozonation

Deniz Nasuhoglu, Siavash Isazadeh, Paul Westlund, Sarah Neamatallah, Viviane Yargeau

Department of Chemical Engineering, McGill University, Montreal, Canada, H3A 0C5

**Keywords:** Ozonation, disinfection, contaminants of emerging concern, endocrine activity, chronic toxicity

#### Abstract

Municipal wastewater treatment plants (WWTP) effluents are primary sources of pathogenic microorganisms and contaminants of emerging concern (CECs) released into the aquatic environment. Main concerns regarding these pollutants include transmission of waterborne diseases to humans and toxic and endocrine disrupting effects on aquatic organisms. In the coming years, WWTPs are expected to invest billions of dollars in upgrades to meet new regulatory requirements for wastewater from Environment Canada. For this reason, we investigated the performance of ozone when the technology is used for disinfection to overcome multiple risk factors such as disinfection, CEC removal, endocrine activity and toxicity for real effluents collected from three WWTPs. Two secondary effluents required mean specific ozone doses for disinfection of 0.25 and 1.04 gO<sub>3</sub>/gDOC whereas the advanced primary effluent required 1.52 gO<sub>3</sub>/gDOC to achieve a total coliform target disinfection criteria of 1000 MPN/100 ml (equivalent to 200 MPN/100 ml *E. coli*). At ozone doses for disinfection, CECs with high

Download English Version:

<https://daneshyari.com/en/article/6579175>

Download Persian Version:

<https://daneshyari.com/article/6579175>

[Daneshyari.com](https://daneshyari.com)