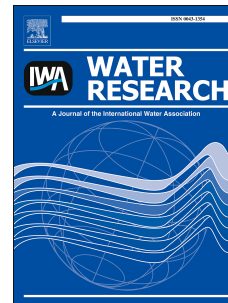


Accepted Manuscript

Degradation of sulfolane using activated persulfate with UV and UV-Ozone

Maryam Izadifard, Gopal Achari, Cooper H. Langford



PII: S0043-1354(17)30615-2

DOI: [10.1016/j.watres.2017.07.042](https://doi.org/10.1016/j.watres.2017.07.042)

Reference: WR 13085

To appear in: *Water Research*

Received Date: 20 March 2017

Revised Date: 7 June 2017

Accepted Date: 16 July 2017

Please cite this article as: Izadifard, M., Achari, G., Langford, C.H., Degradation of sulfolane using activated persulfate with UV and UV-Ozone, *Water Research* (2017), doi: 10.1016/j.watres.2017.07.042.

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.

Degradation of sulfolane using activated persulfate with UV and UV-Ozone

Maryam Izadifard¹, Gopal Achari¹, Cooper H Langford²

¹

Department of Civil Engineering, University of Calgary, 2500 University Dr. NW, Calgary, AB, T2N 1N4, Canada

²

Departments of Chemistry, University of Calgary, 2500 University Dr. NW, Calgary, AB, T2N 1N4, Canada

Highlights

- Mineralization of sulfolane by UVC/persulfate and persulfate/O₃ was studied for the first time.
- Impact of water pH and water composition on degradation of sulfolane was studied.
- Possibility of using UVA/persulfate was investigated.
- The method was verified for treatment of sulfolane in contaminated ground water samples.

ABSTRACT

This study investigates the degradation of sulfolane in aqueous system by (NH₄)₂S₂O₈ /UVC and (NH₄)₂S₂O₈ /O₃/UVC. While bubbling O₃ significantly decreased the reaction time, the experimental results in both cases were consistent: firstly, the degradation of sulfolane followed pseudo-first order kinetic models, secondly, the reaction rates were affected by persulfate dosages, UV light intensity, initial pH and concentration of carbonate/bicarbonate present. Low concentration of chloride (less than 100 ppm) had no effect on the reaction rate. Application of (NH₄)₂S₂O₈ /O₃/UVA for degradation of sulfolane was also investigated. It was found that for higher sulfolane degradation kinetics, higher concentrations of persulfate was required under UVA irradiation. Finally, (NH₄)₂S₂O₈/UVC was evaluated for its applicability for degradation of sulfolane in groundwater samples.

Download English Version:

<https://daneshyari.com/en/article/5758804>

Download Persian Version:

<https://daneshyari.com/article/5758804>

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