

## Accepted Manuscript

Ferrate(VI) based chemical oxidation for the remediation of aged PCB contaminated soil: Comparison with conventional oxidants and study of limiting factors

Olivier Monfort, Muhammad Usman, Isabelle Soutrel, Khalil Hanna

PII: S1385-8947(18)31590-0

DOI: <https://doi.org/10.1016/j.cej.2018.08.116>

Reference: CEJ 19730

To appear in: *Chemical Engineering Journal*

Received Date: 24 April 2018

Revised Date: 14 August 2018

Accepted Date: 17 August 2018



Please cite this article as: O. Monfort, M. Usman, I. Soutrel, K. Hanna, Ferrate(VI) based chemical oxidation for the remediation of aged PCB contaminated soil: Comparison with conventional oxidants and study of limiting factors, *Chemical Engineering Journal* (2018), doi: <https://doi.org/10.1016/j.cej.2018.08.116>

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.

**Ferrate(VI) based chemical oxidation for the remediation of aged PCB contaminated soil:****Comparison with conventional oxidants and study of limiting factors**

Olivier Monfort <sup>a,\*</sup>, Muhammad Usman <sup>b,c</sup>, Isabelle Soutrel <sup>a</sup>, Khalil Hanna <sup>a,\*</sup>

<sup>a</sup> Univ Rennes, Ecole Nationale Supérieure de Chimie de Rennes, CNRS, ISCR (Institut des Sciences Chimiques de Rennes) – UMR 6226, F-35000 Rennes, France

<sup>b</sup> Environmental Mineralogy, Center for Applied Geosciences, University of Tübingen, 72074 Tübingen, Germany

<sup>c</sup> Institute of Soil and Environmental Sciences, University of Agriculture, Faisalabad 38040, Pakistan

\*correspondence: [olivier.monfort@ensc-rennes.fr](mailto:olivier.monfort@ensc-rennes.fr) and [khalil.hanna@ensc-rennes.fr](mailto:khalil.hanna@ensc-rennes.fr) ;

ENSCR, 11 allée de Beaulieu, CS 50837, 35708 Rennes Cédex 7, France

**Abstract**

Ferrate (Fe(VI)) has emerged as an efficient oxidant to treat organic pollutants in aqueous solution. However, its application has never been assessed to remediate the contaminated soils. Here, we report the first study to use Fe(VI) for chemical oxidation of PCBs in historically contaminated soils obtained from an industrial wasteland. The first part of this study explores the efficiency of ferrate(VI) to degrade PCBs under various experimental conditions (liquid/solid ratio, oxidant dose, temperature and reaction time). Integrated application of Fe(VI) with conventional oxidants (hydrogen peroxide  $\text{H}_2\text{O}_2$ , persulfate  $\text{S}_2\text{O}_8^{2-}$  and peroxymonosulfate  $\text{HSO}_5^-$ ) was also tested. Conventional oxidants resulted in only 2 –

Download English Version:

<https://daneshyari.com/en/article/8946799>

Download Persian Version:

<https://daneshyari.com/article/8946799>

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