

Biological Treatment of a Mixture of Iodine-Containing Aromatic Compounds from Industrial Wastewater

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Abstract : Iodinated Compounds (IC) are widely detected contaminants in most aquatic environments including sewage treatment plant, surface water, ground water and even drinking water, up to the $\mu\text{g.L}^{-1}$ range. As IC contribute in the adsorbable organic halides (AOX) level, their removal or dehalogenation is expected. We report here on the biodegradability of a mixture of IC from an industrial effluent using a microbial consortium adapted to grow on IC as well as the native microorganisms. Both aerobic and anaerobic treatments were studied during batch experiments in 500-mL flasks. The degree of mineralization and recovery of iodide were monitored by HPLC-UV, TOC analysis and potentiometric titration. Providing ethanol as an electron acceptor was found to stimulate anaerobic reductive deiodination of IC while sodium chloride even at high concentration (22 g.l^{-1}) had no influence on the degradation rates nor on the microbial viability. Phylogenetic analysis of 16S RNA gene sequence (MicroSeq®) was applied to provide a better understanding of the degradative microbial community.

Keywords : iodinated compounds, biodegradability, deiodination, electron-accepting conditions, microbial consortium

Conference Title : ICW 2015 : International Conference on Wastewater

Conference Location : Paris, France

Conference Dates : February 23-24, 2015