## **Dehalogenation of Aromatic Compounds in Wastewater by Bacterial Cultures**

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**Abstract :** Halogenated Aromatic Compounds (HAC) are major organic pollutants that are detected in several environmental compartments as a result of their widespread use as solvents, pesticides and other industrial chemicals. The degradation of HAC simultaneously at low temperature and under saline conditions would be useful for remediation of polluted sites. Hence, microbial processes based on the metabolic activities of anaerobic bacteria are especially attractive from an economic and environmental point of view. Metabolites are generally less toxic, less likely to bioaccumulate and more susceptible for further degradation. Studies on biological reductive dehalogenation have largely been restricted to chlorinated compounds while relatively few have focussed on other HAC i.e., fluorinated, brominated or iodinated compounds. The objectives of the present work were to investigate the biodegradation of a mixture of triiodoaromatic molecules in industrial wastewater by an enriched bacterial consortium. Biodegradation of the mixture was studied during batch experiments in an anaerobic reactor. The degree of mineralization and recovery of halogen were monitored by HPLC-UV, TOC analysis and potentiometric titration. Providing ethanol as an electron donor was found to stimulate anaerobic reductive dehalogenation of HAC with a deiodination rate up to 12.4 mg.L-1 per day. Sodium chloride even at high concentration (10 mM) was found to have no influence on the degradation rates nor on the microbial viability. An analysis of the 16S rDNA (MicroSeq®) revealed that at least 6 bacteria were predominant in the enrichment, including Pseudomonas aeruginosa, Pseudomonas monteilii, Kocuria rhizophila, Ochrobacterium anthropi, Ralstonia pickettii and Rhizobium rhizogenes.

Keywords : halogenated aromatics, anaerobic biodegradation, deiodination, bacterial consortium

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