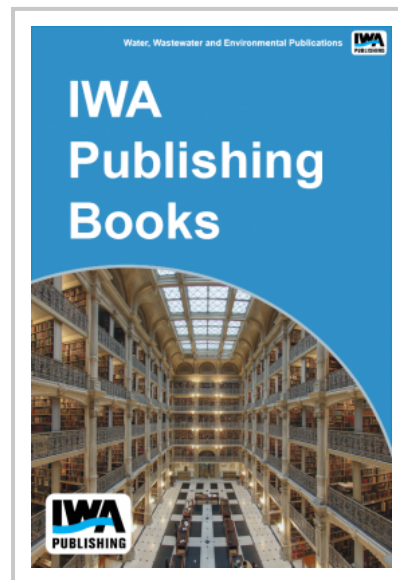


Secondary Wastewater Effluent Disinfection using Tin Oxide Anode Technology

The feasibility of tin oxide anodes for the disinfection of secondary effluents was evaluated in batch, bench scale reactors. After optimizing the preparation of tin oxide anodes, their performance was compared to three commercially available anodes. The performance of tin oxide anodes was similar to the commercial anodes in dual chamber reactors in which the anode and cathode were separated by a Nafion membrane. However, the tin oxide anodes were superior to the commercial anodes in a single chamber reactor, which is a configuration characteristic of an full-scale disinfection system. Kinetic evaluations showed that hydroxyl radicals are not the primary oxidant in tin oxide anode systems. Superoxide is generated at the cathode, and also plays a role in coliform inactivation. Common water quality constituents, including ammonia-nitrogen, nitrite-nitrogen, nitrate-nitrogen, alkalinity, and chemical oxygen demand, had no effect on rates of coliform inactivation.



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