Short Communication

Removal of Cyclic and Linear Siloxanes in Effluents from a Cosmetic Wastewater Treatment Plant by Electrochemical Oxidation

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The presence of cyclic and linear siloxanes in wastewater samples after different processing units of a cosmetic wastewater treatment plant (WWTP) in Beijing was investigated in the current study. Dodecamethylcyclohexasiloxane (D6) and linear siloxanes (L5 to L16) were detected in wastewater. D6, L14, L15 and L16 were the dominant siloxanes in wastewater. An electrochemical oxidation reactor was applied for advanced treatment of siloxanes in cosmetic WWTP effluents. The stainless steel plates were used as anode and cathode electrode. It concluded that the removal efficiency of siloxanes was significantly enlarged with the increasing applied current density when the reaction time was increased from 0 to 20 min. Under the optimal reaction conditions, with reaction time of 20 min, current density of 20 mA/cm², electrode plate distance of 1.0 cm and electrode plate amounts of 5 pairs, the removal efficiencies of D6, L14, L15 and L16 were from 30.2% to 93.3%.

Keywords: Cyclic siloxanes, linear siloxanes, wastewater treatment plants (WWTPs), electrochemical oxidation, persistent organic pollutants (POPs)

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