

Selected Advanced Oxidation Processes for Wastewater Remediation

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Summary

Advanced oxidation processes (AOPs) can effectively degrade persistent compounds in wastewater by enhancing biodegradation and minimizing toxicity. They achieve this by generating reactive free radical species, such as $\text{H} \bullet$, $\text{OH} \bullet$, $\text{HOO} \bullet$, $\text{SO}_4 \bullet$, which attack organic and inorganic compounds and degrade or mineralize them to less harmful products. Combining photocatalysis with techniques, such as hydrodynamic cavitation, ultrasound, and sonoelectrochemical oxidation, creates hybrid AOPs with high oxidation capabilities. This chapter synthesizes literature on selected AOP techniques, including hybrid strategies and a brief discussion on membrane-based AOPs. The principles and properties of selected AOPs are described and future research directions suggested.