



## Mechanistic insight into disinfection by electrocoagulation—A review

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### ABSTRACT

To protect environmental and human health, enhanced treatment methods are more than required to kill microorganisms from wastewater. The electrocoagulation (EC) process is more and more employed to remedy wastewater. This review aims to focus on the EC process as an electrodisinfection (ED) technique, i.e., a microorganism killing method, in terms of the mechanisms involved. An excellent performance of EC is shown through a large review of literature. The electric field (EF) contribution remains fundamental in killing microorganisms. Also, the adsorption or cohesion of bacteria onto Fe/Al hydroxides is considered a key stage in ED upon EC. Much more effort needs to be performed to qualitatively and quantitatively decide between EF and cohesion contributions. More research should be addressed to assessing more and more probable generation of the hydroxyl radical ( $\cdot\text{OH}$ ) through the EC process.

*Keywords:* Electrocoagulation (EC); Electrodisinfection (ED); Electric field (EF); Electro-Fenton (E-F); Boron-doped diamond (BDD); Stainless steel (SS); Advanced oxidation process (AOP); Reactive oxygen species (ROSs); Reactive chlorine species (RCSs)

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