

# Extremophiles in Wastewater Treatment

Susana Rodriguez-Couto

Department of Separation Science, LUT School of Engineering Science, Lappeenranta-Lahti  
University of Technology LUT, Sammonkatu 12, 50130 Mikkeli, Finland

## ABSTRACT

Extensive industrialization generates huge quantities of heavily polluted effluents containing hazardous xenobiotic pollutants. These pollutants are difficult to treat by means of conventional wastewater treatment methods, causing their persistence and accumulation in the environment with detrimental consequences for the ecosystem and human health. This has pushed the search for alternative technologies such as those based on the use of microorganisms, among which extremophiles appear particularly attractive. Thus, extremophilic microorganisms have evolved to survive in extreme environments (e.g., hot springs, saline, alkaline or acid lakes, deep sea habitats, deserts, glaciers). They belong to the domains *Eucarya*, *Archaea* and *Bacteria* being predominant in the two latter. Extremophilic microorganisms are able to produce different enzymes named extremozymes that are able to operate under harsh environmental conditions such as those existing in polluted industrial effluents. Consequently, extremophiles and extremozymes are interesting potential candidates for the ecological, cost-effective and sustainable treatment of wastewater due to their unique ability to proliferate and operate under extreme environmental conditions and, thence, their increased attention by environmental researchers.

**Keywords:** Sustainable wastewater treatment, Extremozymes, Extremophiles

## How to Cite

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