

# Assessment of antibiotics from natural water resources and the potential ecological risk associated with their presence in aquatic ecosystems for developing advanced technologies for removal of antibiotic

## **Abstract**

Aquatic ecosystems provide many services for society including water for drinking, irrigation, and recreational activities. Emergent contaminants such as antibiotics that are present mainly in urban wastewater have a substantial impact on environment and human health, such as: Potential genotoxic effects, disruption of aquatic ecosystems and development of antibiotic resistance. The main objective of this paper is to develop an advanced analytical method for identifying emergent pollutants within the antibiotic category by using high performance SPE-online-UHPLC-MS/MS techniques from different aqueous matrices, in order to develop technologies to remove them from wastewater. The ecological risk index (RI) associated with the presence of antibiotics in aquatic ecosystems was also calculated for potential ecological risk assessment, using the ratio between the measured concentration (MC) of antibiotics detected in surface water and predicted no-effect concentration (PNEC) values.