
PERSIST: Fate and PERSISTence of emerging contaminants and MRB in a continuum of surface water groundwater from the laboratory scale to the regional scale



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Emerging organic contaminants (EOCs), such as pharmaceutical compounds, and multi-resistant bacteria (MRB) represent a growing public health concern. Residual pharmaceutical products in the environment may arise from wastewater effluent outlets and intensive cattle grazing activities, while MRB may result from both direct release of wastewater to the environment and in-situ development due to the occurrence of residual antibiotics. However, the fate and transfer of EOCs and MRB in both surface water and groundwater bodies are yet not well known.

In this context, the PERSIST project aims to increase our knowledge on the behavior of a selection of targeted pharmaceutical products and multi-resistant bacteria in both surface water and groundwater bodies. The study will be carried out at two complementary hydrogeological field sites, in Spain, the Empordà basin, and in France, the Vistrenque basin, chosen for their complementarities.

The investigation will be carried out at the catchment scale, in a surface water/groundwater continuum. To better constrain the sources and transfer processes of these compounds, their occurrence will be correlated to environmental tracers to define the origin and residence time of water.

Complementary column experiments will allow to evaluate transport parameters and these results will be up-scaled with the aim to model the fate and migration of EOCs at the catchment scale. Finally, relating the factors that control the hydrological system and contaminant movement with potentially contaminating land-uses will allow identifying areas of vulnerability. Hence, results will be useful to delineate guidelines for groundwater pollution prevention and aquifer restoration, contributing to the development and implementation of EU directives for EOCs occurrence in water bodies.