AQUAlity

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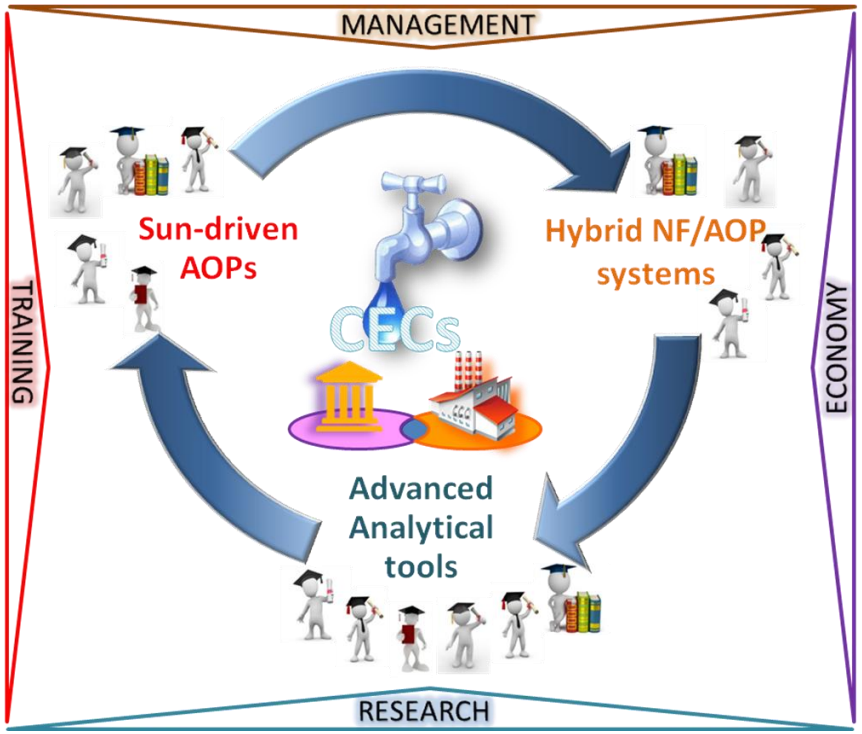
Website www.aquality.etn-eu Facebook www.facebook.com/AQUAlityITN2017

Interdisciplinary Cross-sectoral Approach to Effectively Address the Removal of Contaminants of Emerging Concern from Water (AQUAlity)

October 2017-
September 2021



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Who we are

The consortium

7 EU Countries involved

7 Universities

3 Research Institutes

8 Companies

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Our ESRs

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THE PROJECT

Aims to develop innovative purification technologies expected to be more effective than conventional adsorption and biological treatments for the removal of **Contaminants of Emerging Concern** (**CECs**)

RESEARCH METHODOLOGY AND APPROACH

AQUAlity approach lie on the complementary expertise of the Consortium members and will benefit of the synergy between academics and non-academics and of the implementation of ESRs individual projects in three main lines:

1. **Analysis of CECs and their transformation products**
2. **Development of new photochemical materials/processes**
3. **Hybrid nanofiltration / advanced oxidation (NF/AOP) systems**

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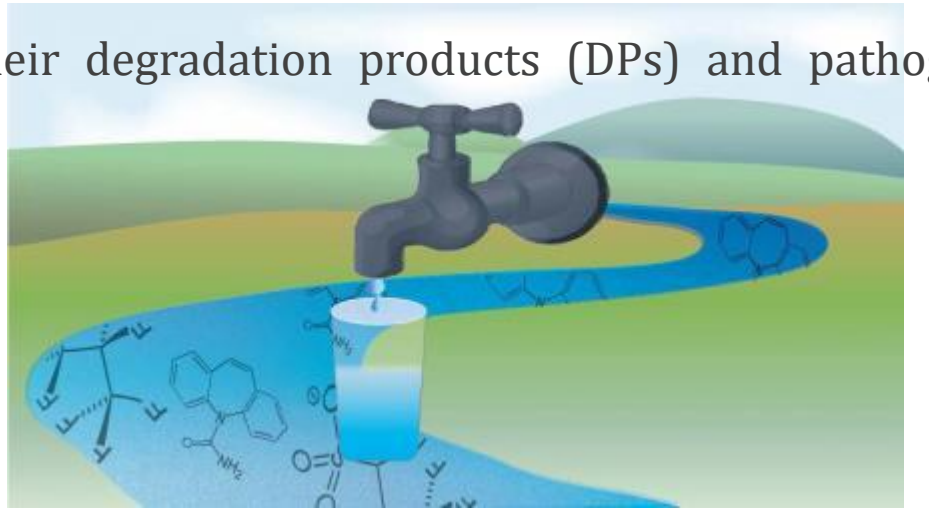
1. High resolution analytical methods for the determination of CECs in aqueous systems and investigation of their environmental fate

- To develop sensitive analytical methods based on green analytical chemistry approaches and high-resolution analytical tools for the determination of CECs and their transformation products down to trace levels in wastewaters and water for human consumption;
- To elucidate the significance of photochemical reactions and their contribution to the abiotic transformation of CECs in water systems;
- To assess the toxicity of CECs, their degradation products (DPs) and pathogens with sensitive bioassays;
- To improve NORMAN database.



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2. Enhanced photochemical methods for the removal of CECs and pathogens in water and wastewater

- To develop novel photochemical materials/processes involving iron or organic photosensitizers;
- To investigate the possibility of introducing (photo)-reductive processes AQUAlity as a first step to deal with pollutants recalcitrant to oxidative processes;
- To determine the role of dissolved organic matter obtained from different sources on photochemical treatment process and on the self- cleaning of aqueous effluents;
- To gain further insight into the mechanistic issues of the studied photochemical processes;
- To optimize the operational variables of the studied processes and, eventually, scale up to pilot plant.

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3. Removal of CECs by hybrid membranes/AOP systems

•To develop innovative ceramic NF membranes showing high rejection for emerging water pollutants, high water permeability, high resistance to fouling and high stability for cleaning and disinfection treatments;

•To develop hybrid NF/solar photo- Fenton system, also combined with ozonation/hydrogen peroxide and electro-Fenton;

•To develop hybrid photocatalytic NF membranes to achieve CECs abatement and fouling resistance under solar light;

•To apply the new systems to real cases.