SafeCREW: a holistic project to reduce NOM and DBPs in drinking water and minimize the human health risk under climate change scenarios

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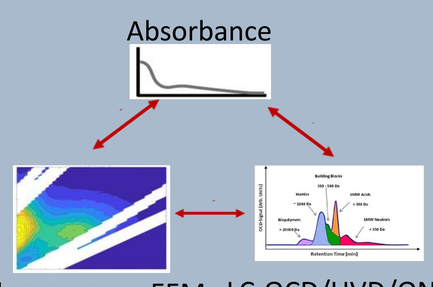
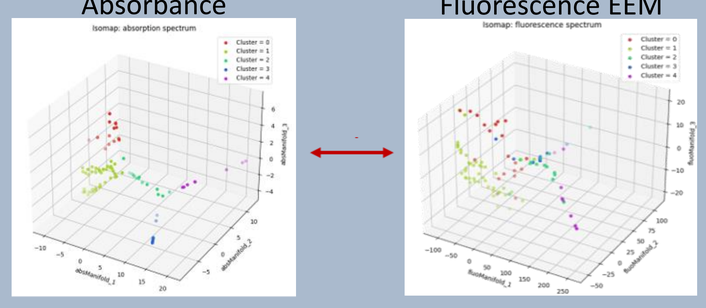
ADVANCED MONITORING STRATEGIES

Water NOM characterization correlating different analytical methods

Ability of the more commonly applied techniques to characterize water NOM and related DBPs formation potential

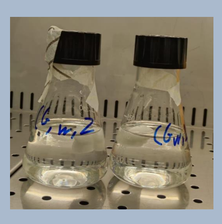


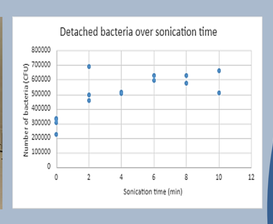
Isomap (dimensionality reduction) and clustering



Microbial contamination early-warning through passive sampling

Detection of target bacteria (E. Coli; Pseudomonas Fluorescence) spread before the outbreak for different sampler materials and configurations.



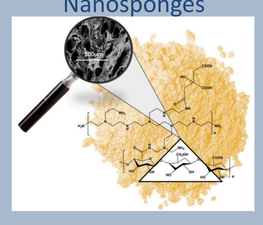


TREATMENTS FOR DBPs FORMATION MINIMIZATION

Water NOM removal through innovative adsorbents

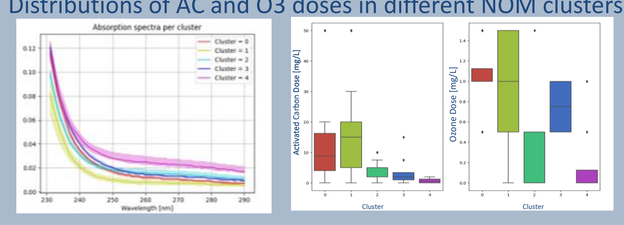
Comparison of cellulose-based nanosponges and activated carbon effectiveness for DBPs precursors removal

Nanosponges



RSSCT columns

Distributions of AC and O3 doses in different NOM clusters



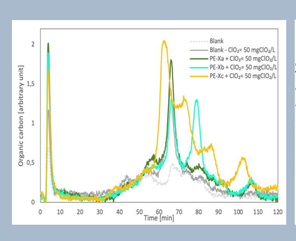
Linking DBPs formation with NOM properties

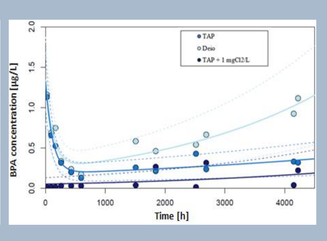
Evaluation of DBPs formation for different NOM (concentration/composition) and disinfectants: outcomes of lab-scale kinetic tests and full-scale monitoring campaign

DISTRIBUTION NETWORKS MANAGEMENT

Leaching tests w/o disinfectants protocols

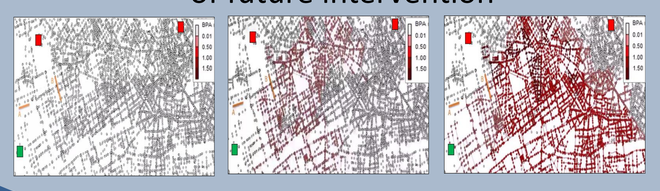
Micropollutants migration, DBPs formation and disinfectant consumption assessment





Chemicals fate modelling

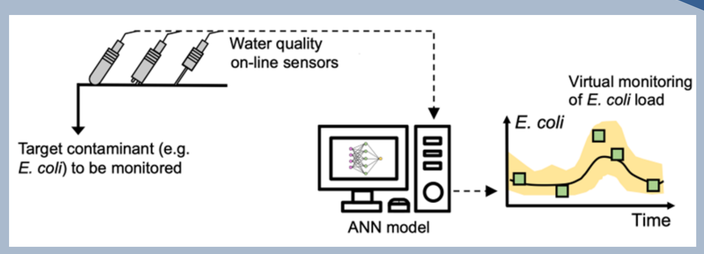
Identification of vulnerable areas and prediction of future intervention



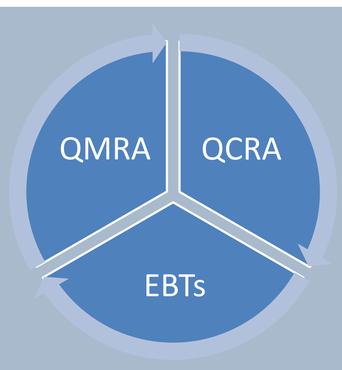
CONSUMER PROTECTION

Guidelines for drinking water management and integrated risk assessment for water suppliers and authorities under climate change scenarios, through:

- Development of soft-sensors through Artificial Intelligence (AI) ⟷ Real-time monitoring of target variables through online (low-informative) sensors combined with AI algorithms



- Development of an integrated risk assessment procedure ⟷ Balance between conflicting outcomes of water disinfection: maximization of inactivation extent (microbial risk, QMRA) but minimization of DBPs formation (chemical risk, QCRA) and toxicity (Effect-Based Triggers, EBTs)



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safe CREW

https://safecrew.org/

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