

SEMINAR ANNOUNCEMENT

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Advanced treatment technologies and digital solutions for the reuse of wastewater and control of emerging contaminants

Abstract

Water scarcity is a worldwide problem. Particularly, it affects at least 11% of the European population and 17% of the EU territory. In the Mediterranean region 20% of the population lives under constant water stress, that becomes over 50% in summer. The EU's ability to respond to the increasing pressures on water resources could be improved by wider reuse of treated waste water, limiting extraction from surface water bodies. However, some barriers and challenges need to be addressed to assure a safe wastewater reuse. For example, wastewater treatment plant (WWTP) effluents are considered hot spots for the transfer of micro-contaminants (e.g., pharmaceuticals, personal care products, endocrine disruptor compounds, microplastics, etc.) into the environment, which may be damaging to human health and the ecosystems. In this context, the draft for the revision of the EU Directive 91/271/EC for urban wastewater management proposes the regulation of micropollutants in wastewater effluents. In this seminar, results of different research activities connected with the reuse of wastewater will be discussed. Topics will include (i) formation and control of N-Nitrosodimethylamine (NDMA) during potable reuse applications; (ii) development of innovative spectroscopic parameters based on fluorescence measurements to monitor wastewater treatment performances and removal of micropollutants; (iii) innovative advanced oxidation processes to remove micropollutants. Furthermore, results of different European Research projects will be shown, including (i) the project H2020 ULTIMATE, which aims at establishing and extending water smart industrial symbiosis between industry and public water provider; (ii) the project H2020 AquaSPICE, which aims at the development of an innovative and smart water treatment system for the treatment and reuse of industrial wastewater; (iii) the project H2020 Digital Water City (DWC), which developed digital solutions (i.e.; networks of sensors and softsensors) for a safe wastewater reuse; (iv) the project H2020 PROMISCES, which aims to understand as the presence of persistent and mobile chemicals (e.g.; PFAS) may hinder the application of circular economy practices in different environmental compartments; and (v) the project Horizon Europe WATERUN that aims at the development of an innovative methodology for stormwater reuse, which will be based on environmental and health risk assessment.