Luigi Rizzo, Associate Professor, Department of Civil Engineering University of Salerno, Italy

Wastewater reuse: effect of advanced oxidation processes on contaminants of emerging concern

The occurrence of chemical (e.g., pharmaceuticals, pesticides, personal care products etc.) and biological (e.g., antibiotic resistant bacteria (ARB) and antibiotic resistance genes (ARGs)) contaminants of emerging concern (CECs) in urban wastewater treatment plant (UWTPs) effluents calls for new and more effective advanced treatment methods that can effectively remove CECs before effluent disposal into the environment or reuse. This talk was focused on the introduction of new treatment methods, called advanced oxidation processes (AOPs), to be used downstream of biological process in UWTPs, to minimize the release of the CECs and make wastewater reuse for crop irrigation safer. In particular, the effect of different AOPs on chemical and biological CECs were explained according to the relevant scientific literature, by emphasizing advantages (e.g., high efficiency in the removal of CECs) and drawbacks (e.g., possible formation of toxic oxidation intermediates) as well as summarizing the main pending questions (e.g., further work on the effect of AOPs on ARB and ARGs is needed).