Palestra ACorner/IST

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April 30, 2024

10:30 am

Sala de Reuniões do Pavilhão Central

Kerry Hamilton is an Assistant Professor in the School of Sustainable Engineering and the Built Environment with a joint appointment in the Biodesign Institute Center for Environmental Health Engineering at Arizona State University. She received her doctoral degree in Environmental Engineering from Drexel University and Master's of Health Science (MHS) degree in Environmental and Occupational Hygiene from Johns Hopkins University. She was a Fulbright Scholar to Australia and Public Health Fellow at the US Environmental Protection Agency. Her research focuses on assessing and reducing health risks from pathogens transmitted by environmental exposures.

Frontiers in quantitative risk assessment for antimicrobial resistance (AMR): Modeling contributions from water and wastewater

Antimicrobial resistance (AMR) is a critical global issue, with AMR expected to surpass cancer as a leading cause of global deaths by 2050. Environmental dimensions are now widely recognized to contribute to the spread of AMR within a One Health framework. Among these, wastewater treatment plants (WWTPs), combined sewer overflows (CSO), and illicit wastewater connections are of particular concern because they are recipients of a myriad of antimicrobials, antibiotic resistant bacteria (ARB), antibiotic resistance genes (ARGs), and mobile genetic elements (MGEs) that harbor and disseminate ARGs. While WWTPs are critical in reducing these constituents, there are also concerns that problematic gene/bacterial combinations could be selected for or amplified during treatment. A risk framework was developed to modify existing approaches such as quantitative microbial risk assessment (QMRA) to consider the multi-faceted nature of AMR risks. Results from a systematic review and meta-analysis provide information needed to parameterize risk models and rank risks from different scenarios. Several modeling case studies on water reuse and agriculture will be presented to demonstrate the importance of considering the dynamics of AMR processes in process models and risk assessment.