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EBNet Travel Bursary Support
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IWA Young Water Professionals European Conference 16-19 June 2024 Copenhagen, Denmark

Presentation:

Fate Models Predicting PFAS Removal and Distribution in Activated Sludge Treatment
Pinelopi Savvidou, Cranfield University

Pinelopi Savvidou, a PhD Researcher at Cranfield University, recently attended the Young Water Professionals European Conference 2024. This event convened over 100 researchers, water utility experts, and policymakers from around the world to discuss cutting-edge research for water and wastewater treatment.

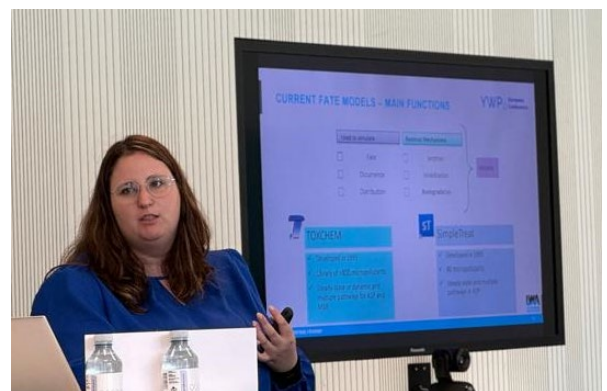
With support from an EBNet Travel Bursary, Pinelopi delivered a full panel presentation on her work on the fate model for PFAS during biological treatment during the conference's PFAS and Antimicrobial Resistance session. Her presentation introduced how mechanistic fate and transport models can be tailored to accurately predict the occurrence and distribution of the 'forever chemicals' during wastewater treatment.

The findings of this study are significant, as they demonstrate the reasons behind the discrepancies between predicted and observed values, encountered when practitioners use modelling tools for PFAS. The key insights of this work indicate that there may be an alternative way for PFAS fate predictions, using machine learning tools and data-driven models. Such models can be used by biotechnologists to optimize the removal of recalcitrant pollutants, thereby minimizing their release into the environment.

[Constructed wetlands as nature-based solutions in managing per-and poly-fluoroalkyl substances \(PFAS\): evidence, mechanisms, and modelling.](#)

Savvidou, P., Dotro, G., Campo, P., Coulon, F. and Lyu, T., 2024. *Science of The Total Environment*, 934, p.173237.

For Pinelopi's video see <https://youtu.be/Au6716TkL5s>



Presentation at the IWA YWP Conference

Fate models of pollutants have been widely used in the wastewater sector delivering multiple benefits to the industry such as improved removal of substances, understanding of operating conditions, and minimized laboratory work and resources. Focusing on understanding which are the optimum conditions of activated sludge processes to achieve maximum biodegradation and biotransformation of micropollutants, this work falls within the scope of EBNet Theme 1 – Pollutants and Media

Predicting the removal of contaminants for the betterment of water quality and therefore the protection of human and environmental health falls in the element of 'sustainability assessment', which fits under the scope of EBNet Theme 3 – Technology Interfaces.

The current work focuses on PFAS and how fate models can accurately predict bioremediation patterns of such recalcitrant compounds. This ties up with EBNet's PFAS Working Group. Part of this research was conducted upon the request by the UK Environment Agency to assess the applicability of widely used fate models for their accuracy in predicting the removal of PFAS.