

Emerging pollutants in
freshwater ecosystems

Water JPI 2018 Conference

6–7th of June
Helsinki FINLAND



ACADEMY OF FINLAND



Welcoming words

“Adopted in December 2011 by the European Council for Competitiveness, the Water Joint Programming Initiative has been successful in mobilising significant national resources for developing research and innovation programmes on water challenges.

By adopting a multidisciplinary approach targeted to end-users and addressing the whole research-innovation chain, the Water JPI is now established as a platform to facilitate collaboration, awareness, knowledge transfer and capacity building for researchers, stakeholders and citizens. The ultimate goal is to gather and generate scientific evidence that can inform national, European and international policies, and support new practices and innovations among end-users, contributing to the preservation of healthy aquatic resources for consumers, protecting biodiversity and bringing effective solutions to tackle the water crisis in many areas of the world.

This conference will be the occasion to present recent progress in our understanding of the nature of emerging contaminants, their behaviour, new approaches for managing the corresponding risks and solutions for treating and restoring environments.”

Maurice Heral, Water JPI Chair



WATER JPI

Joint Programming Initiatives are inter-governmental collaborations meant to tackle major societal challenges unable to be addressed by individual countries and in doing so contribute to the development of the European Research Area. Member States and Associated Countries participate in joint initiatives on a voluntary basis to increase the value of relevant national and European R&D funding through joint planning, implementation and evaluation of national research programmes. The Council of the European Union decided to launch a Joint Programming Initiative (JPI) in water research in December 2011. Today, the Water JPI (www.waterjpi.eu) consists of 22 partner countries and two observers. The aim of the Water JPI is to create a joint European view of how to achieve sustainable water systems for a sustainable economy both in Europe and worldwide.

Finland has been a member of the initiative since its launch. “A key objective of the Water JPI is to strengthen the impact and relevance of research, and to promote the use of research knowledge in policy-making,” says Laura Raaska, Director of the Academy of Finland’s Biosciences and Environment Research Unit. “We’re actively involved in assessing and promoting the societal impact of research and in increasing its exposure. Organising this conference is part of that mission,” Raaska says.

2nd WATER JPI CONFERENCE

Welcome to the 2nd Water JPI Conference, Emerging Pollutants in Freshwater Ecosystems, held in Helsinki on 6–7 June 2018. The conference will gather 200 experts from more than 25 countries to meet and discuss common challenges and share their recent discoveries and knowledge.

Millions of Europeans receive high-quality drinking water every day. However, the provision of safe water for drinking purposes is threatened by, for instance, the improper disposal of chemicals, animal and human waste, pesticides, emerging pollutants and emerging risks from “established” pollutants, aged water supply infrastructures, sub-optimal water management, and natural hazards.

Emerging Pollutants in Freshwater Ecosystems is a very topical theme. The two-day conference will include keynotes and presentations about many different aspects related to emerging pollutants: occurrence, technologies, risk management, ecological effects and health risks. A subject of special interest will be the announcement of the Policy Brief on Emerging Contaminants, prepared by the projects of the very first Water JPI-funded call. This policy brief will be the first in the series of forthcoming Water JPI policy briefs.

Among the UN Sustainable Development Goals (SDGs), the position of water-related issues is strong. Water is at stake not only in SDG 6, “Ensure availability and sustainable management of water and sanitation for all”, but in nearly all 17 SDGs. Achieving the set objectives by 2020 and 2030 will require innovative solutions that are easily transposable to all countries. This requires significant rethinking. A crucial part of the conference will therefore be devoted to SDGs related to water challenges.

The conference is a joint effort between the Academy of Finland, the Water JPI, Natural Resources Institute Finland and the Finnish Ministry of the Environment. The organisers wish you all a productive and enjoyable meeting!

Organising team at the Academy of Finland: Marjo Aaltomaa, Laura Forsström, Harri Hautala, Aino Laine, Laura Raaska, Riitta Tirronen, Kata-Riina Valosaari and Vesa Yli-Pelkonen.

Water JPI: Water JPI Governing Board and Water Coordination and Secretariat Team Conference

Scientific Committee: Dermot Diamond, Dublin City University, Steven Eisenreich, Prof. em. Vrije Universiteit Brussel, Antonio Lo Porto, EurAqua, European Network of Freshwater Research Organisations, Gilles Neveu, EU-INB, EU Network of River Basins Organisations, Inmaculada Ortiz, Universidad de Cantabria, Teppo Vehanen, EIFAAC, European Inland Fishery and Aquaculture Advisory Commission



Keynote Speakers

Fiona Regan is Professor in Chemical Science at Dublin City University and Director of the DCU Water Institute. She studied environmental science and technology and later completed a PhD in analytical chemistry in 1994. In 1996 she took up a lecturing position at Limerick Institute of Technology. In 2002 she joined the School of Chemical Sciences as a lecturer in analytical chemistry. In 2008 she became senior lecturer and in 2009 the Beaufort Principal Investigator in Marine and Environmental Sensing. The title of her keynote speech is: “Technical Solutions and Strategies to Monitor and Reduce Pollutants”.



Professor **Barbara Kasprzyk-Hordern** comes from the University of Bath, UK, where she leads the Environmental Chemistry Group. She received her PhD in Chemistry from Adam Mickiewicz University and has since then worked at Adam Mickiewicz University, the University of Glamorgan, the University of Huddersfield and the University of Bath. The title of her keynote speech is: “Water Fingerprinting to Inform the State of the Environment and Public Health”.



Conference Chair

Dr **Marko Keskinen** works as Senior University Lecturer in water engineering at Aalto University, Finland. He is active in both research and policy-making related to water, and his current research interests include integrated water resources management, water-energy-food security nexus, sustainability as well as science-policy-stakeholder interactions. For more information: <https://people.aalto.fi/marko.keskinen>.



Conference Moderator

Liisa Mayow is co-founder of Kaskas Media, the only science communications company in the Nordics. She believes that science and research deserve more attention in society. She has a background in journalism in various major Finnish news media, and has coached numerous researchers from different fields on science communications, social media and storytelling.



PROGRAM

Chair: Marko Keskinen, Aalto University
Moderator: Liisa Mayow, Kaskas Media

Day 1 Wednesday, 6 June

8:30-9:30 Registration and Coffee

OPENING CEREMONY

9:30-10:00 *Kimmo Tiilikainen*, Finnish Minister of the Environment, Energy and Housing
Heikki Mannila, President of the Academy of Finland

OPENING SESSION

10:00-10:30 The Water JPI and its contribution to the Emerging Pollutants challenges
Padraic Larkin, Water JPI Vice-Chair
Research and innovation in support of EU water policy
Pavel Misiga, Head of the Eco-Innovation Unit, European Commission

SESSION I: Emerging pollutants: occurrence and management

10:30-11:15 KEYNOTE: Water fingerprinting to inform the state of the environment and public health
Barbara Kasprzyk-Hordern, University of Bath

11:15-11:30 Emerging viruses in irrigation waters
Rosina Girones, University of Barcelona

11:30-11:45 Chemical status of freshwaters in Finland, Europe
Jaakko Mannio, Finnish Environment Institute

11:45-12:00 Microplastic concentrations in surface water at Lake Kallavesi
Arto Koistinen, University of Eastern Finland

12:00-13:00 Lunch

SESSION I continues

13:00-13:15 A framework to assess and manage contaminants of emerging concern in indirect potable reuse: Water-JPI FRAME project
Kevin Jewell, The German Federal Institute of Hydrology

13:15-13:30 Decision support tool for establishing an action plan aiming to decrease the discharge of micro pollutants into sewage system networks
Jolanda Boisson, IRH Ingénieur Conseil

13:30-13:45 Mitigation of waterborne microbiological and chemical health risks – options and costs to reduce the source water contaminants
Päivi Meriläinen, National Institute for Health and Welfare

13:45-14:00 Monitoring strategy, annual fluxes and risk assessment of emerging contaminants in a catchment scale
Zulin Zhang, The James Hutton Institute

14:00-14:15 Policy corner

SESSION II: Policy Brief on emerging pollutants – Water JPI Pilot Call

Launch of the Policy Brief

Panel discussion:

Steven Eisenreich, Vrije Universiteit Brussel

14:15-15:00 *Despo Fatta-Kassinos*, Nireas-IWRC, University of Cyprus, Chair of the Water JPI Scientific and Technological Board

Kevin Jewell, The German Federal Institute of Hydrology

Annemarie van Wezel, KWR Water

15:00-15:30 Coffee

SESSION III: Ecological effects and risk assessment of emerging pollutants

15:30-15:45 Optimized risk assessment of hazardous chemicals typically present in Finnish municipal wastewaters
Heli Ratia, Finnish Environment Institute

15:45-16:00 Pesticide mixtures in the aquatic environment: risks of neonicotinoids and other pesticides to aquatic biota
Victor Carrasco Navarro, University of Eastern Finland

16:00-16:15 Bearing the burden of diffuse waterborne pollutants – a confession from phytoplankton communities
Didier Baho, Norwegian Institute for Water Research (NIVA)

16:15-16:30 Contaminants of emerging concern in sub-Saharan African aquatic systems
Titus Msagati, University of South Africa

Session IV: UN SDG, emerging pollutants & the role of Water JPI? – Challenges in countries beyond Europe

Introductory talk: *Seppo Rekolainen*, Finnish Ministry of Agriculture and Forestry, Vice-Chair of Water JPI Scientific and Technological Board
Panel discussion:

16:30-17:30 *Nonhlanhla Kalebaila*, Water Research Commission of South Africa

Olli Varis, Aalto University

Sarantuyaa Zandaryaa, UNESCO

Wrap-up: *Bjørn Kaare Jensen*, Geological Survey of Denmark and Greenland

18:00-21:00 **POSTER SESSION WITH WINE & SNACKS**

Day 2 Thursday, 7 June

9:00-9:15 SECOND DAY OPENING WORDS
Mari Walls, President & CEO of Natural Resources Institute Finland

SESSION V: Options and strategies for monitoring and remediation of pollutants

9:15-10:00 KEYNOTE: Technical solutions and strategies to monitor and reduce pollutants
Fiona Regan, Director of the DCU Water Institute, Prof. of Chemistry at Dublin City University

10:00-10:15 Determination of precursors of perfluoroalkyl acids in surface and wastewaters: application to some case studies
Stefano Polesello, CNR-IRSA Water Research Institute

10:15-10:30 Occurrence and removal of compounds of emerging concern during soil aquifer treatment
Nina Hermes, The German Federal Institute of Hydrology

10:30-10:45 Persistent, mobile and now partially known. The potential threat to drinking water resources by persistent, mobile organic compounds (PMOCs)
Thorsten Reemtsma, Helmholtz Centre for Environmental Research

10:45-11:10 Coffee

SESSION V continues

11:10-11:25 Safe water systems in Arsenic polluted agricultural areas using a novel Schwertmannite-based absorbent
Isabel Jordan, GEOS Ingenieurgesellschaft mbH

11:25-11:40 Development of an efficient and sustainable methodology for emerging pollutants removal in WWTPS
Maria Carmen Lasheras Ruíz, Laboratorios Tecnológicos de Levante

11:40-11:55 Technologies for the removal of pharmaceuticals from wastewaters
Mika Mänttari, Lappeenranta University of Technology

11:55-12:10 Secondary amine N-nitrosation processes contribute to the increase of genotoxicity of nitrate-rich wastewater under UV-C treatment
Serge Chiron, Montpellier University

12:10-12:25 Intensification of UV-C tertiary treatment: disinfection and removal of micropollutants by sulfate radical based advanced oxidation processes
Jukka Pellinen, University of Helsinki

12:25-12:40 Policy corner

12:40-13:35 Lunch

SESSION VI: Tackling emerging pollutants: joining forces for greater success

Capacity building and Cooperation: Water JPI Knowledge Hub vs. COST action – What is needed
13:35-14:20 Introductory talk: *Despo Fatta-Kassinou*, Nireas-IWRC, University of Cyprus, Chair of the Water JPI Scientific and Technological Board
Panel discussion with representatives of different P2Ps

SESSION VII: Water quality and human health: the challenge for the future

14:20-14:35 Occurrence and distribution of contaminants of emerging concern along the Ergene River during dry seasons
Seyedmehdi Emadian, Bogazici University

14:35-14:50 Chloramphenicol as an emerging environmental pollutant and a potential driver of antimicrobial resistance
Felicity Elder, University of Bath

14:50-15:05 Occurrence of pharmaceuticals residues and endocrine disruptors in a waste water treatment plant-impacted rivers of Krakow agglomeration in South Poland
Katarzyna Styszko, AGH University of Science and Technology

15:05-15:20 Policy corner

15:20-15:45 Coffee

15:45-16:00 Target analysis of a large number of mineralocorticoids, glucocorticoids and progestogens in wastewater and receiving surface waters
Alexander Weizel, Federal Institute of Hydrology

16:00-16:15 Human exposure to antibiotic resistant *Escherichia coli* through drinking, irrigation and recreational water
Eithne O'Flaherty, University College Dublin

16:15-16:30 Antibiotic resistance, an emerging pollution in river environments in Indonesia
Windi Muziasari, University of Helsinki

16:30-16:45 Nanoparticles and their fate in the environment, health impact and risk assessment
Marianne Matzke, NERC CEH

16:45-17:00 Concluding words
Maurice Heral, Water JPI Chair

KEY INFORMATION

Venue

Marina Congress Center has a fantastic location in the centre of Helsinki by the sea in Katajanokka; just a few minutes' walk from Kauppatori market square and a short walk from Helsinki railway station. The conference room is Fennia II.

Posters

Posters will be on display during the whole conference just outside the Fennia II conference room. The poster numbers have been assigned and can be found from the abstract book. Presenting authors will receive the poster number from the registration desk. At least one of the authors should be present and stand by the poster during the poster session.

Registration and information desk

The information desk will be open during the entire conference. In case you have any questions, visit the desk or ask a staff member.

Staff

Conference staff will be easily identified by their spherical name tags. The staff members will be available for your questions and provide help throughout the conference.

Breaks, lunch and coffee

Coffee/tea breaks and lunch are included. Marina Congress Center serves only Fairtrade™ or UTZ Good Origin certified coffee. Gluten- and lactose-free products are also available.

Smoking

Smoking is only allowed outside in designated areas (terrace on second floor or next to main entrance).

WiFi

The conference venue offers free WiFi. Login details will be provided at the conference.

Social events

The icebreaker event (Tuesday 5 June at 19:00–21:00) will be held at the Finnish Museum of Natural History, Pohjoinen Rautatiekatu 13. The event will include refreshments, music and a possibility to visit some of the museum exhibitions.

The poster session (Wednesday 6 June at 18:00–21:00) will be held at Marina Congress Center, outside the Fennia II conference room. Wine and snacks will be served during the session and the winner of the Water JPI Photo Competition will be announced.

HELSINKI IN BRIEF

Helsinki, the capital of Finland, has about 630,000 inhabitants and is located in the centre of the Helsinki Region, which has a population of about 1.4 million. Helsinki is a vibrant seaside city on the shore of the Gulf of Finland, which belongs to the Baltic Sea. The city centre of Helsinki is located on a tip of a peninsula, and the archipelago of Helsinki includes more than 300 islands. Helsinki can be characterised as a very green city with many parks, forests and nature conservation areas that provide important recreation opportunities for its inhabitants. Helsinki is also an important university city as it is home to the University of Helsinki and Aalto University among others.

Useful Finnish phrases

Welcome	Tervetuloa
Thank you	Kiitos
Good morning	Hyvää huomenta
Good afternoon	Hyvää päivää
Good evening	Hyvää iltaa
Good night	Hyvää yötä
Goodbye	Näkemiin
Yes	Kyllä
No	Ei
Thank you	Kiitos
I love you	Minä rakastan sinua
Toilet	WC, (N = women, M = men)
Lake	Järvi
River	Joki
Beer	Olut
Coffee	Kahvi
My hovercraft is full of eels	Ilmatyynyalukseni on täynnä ankeriaita

VENUE LOCATIONS

The conference will take place at Marina Congress Center, Katajanokanlaituri 6, Helsinki. The icebreaker event will take place at the Finnish Museum of Natural History, Pohjoinen Rautatiekatu 13, Helsinki. Both locations are within a walking distance from the city centre.



QR code to conference webpage: www.aka.fi/waterjpi2018



Conference hashtag: #waterjpihelsinki