



stowa



Ministry of Infrastructure
and Water Management

Removal of Micropollutants from Wastewater – Results of the Dutch Innovation and Implementation Program

When: Wednesday November 8th, Thursday November 9th and Friday November 10th
Where: Aquatech Expo RAI, Amtrium, Entrance L, Europaplein 24, 1078 GZ Amsterdam
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The Dutch Water Partners are exploring innovative technologies for removal of micropollutants from municipal wastewater. Research has been carried out the past five years in an extensive Innovation Program, which was initiated by the Ministry of Infrastructure and Water Management and the Dutch Water Authorities and managed by STOWA. Through this Innovation Program the implementation of innovative full-scale installations to remove micropollutants will be fast-tracked. These technologies are promising because of reductions on CO2-footprint, costs or enhanced effluent quality in respect to proven technologies. In this three-day event we present a first sneak preview of *the final results of the Dutch Innovation Pilot Program* and *the progress of full scale implementation*.

At the Aquatech Expo, the Dutch Approach on reducing the discharge of micropollutants into surface water is presented including technological challenges of implementation. Results of research of more than 15 technologies on demo and pilot scale will be presented. Furthermore research on how to measure the performance of these technologies will be presented with new and specific sampling and measurement methods.

Registration STOWA Conference Micropollutants Wednesday November 8th and Thursday November 9th

You are welcome to join one or more of the morning or midday sessions for free Wednesday November 8th and Thursday November 9th (see detailed program on the following pages).

- For this event **you must register** at <https://www.stowa.nl/agenda/stowa-aquatech-removal-micropollutants-wastewater>
- Admittance to Sessions is not allowed after start-up.
- For lunch you must register (and attend) both morning and afternoon sessions. Admittance to lunch will be checked.

Bus Excursion Friday November 10th

9.30 – 17.00 Bus excursion to full-scale plants in the Netherlands: PACAS plant wwtp Leiden Noord and Ozone plant wwtp Wervershoof (including experiments hall)

For this bus excursion you have to register separately. A fee of 100 euro for attending the busexcursion has to be paid if you are not an employee of a water authority and in case of no-show.

Knowledge market and poster presentations

STOWA welcomes all other Dutch and International commercial or non-commercial parties, which have carried out research in the field of removal of micropollutants from municipal wastewater, to give a **POSTERPRESENTATION**, which participants can visit during the event. For more information on selection and presentation of posters please contact Mirabella Mulder of STOWA (mmulder@mirbellamulder.nl).



Program Wednesday November 8th

- 10.00 Opening Aquatech Expo
10.00 Registration with coffee and tea
10.30 Opening and welcome – Cora Uijterlinde | STOWA
- 10.45 Session 1 - Tackling removal of micropollutants: policy meets practice**
Chair - Maarten Nederlof | Program Manager Implementation Demo's Dutch Water Authorities
- 10.50 The Dutch Approach – Oscar Helsen | Ministry of Infrastructure and Environment
11.10 Progress Full-scale Implementation Removal of Micropollutants @ NL - Maarten Nederlof
11.30 Full scale implementation of PACAS @ wwtp's Leiden Noord and Oijen – Paul Versteeg | Water Authority Rijnland and Robert Kras | Water Authority Aa and Maas
11.50 Implementation of Activated Carbon: Lessons Learned, Knowledge Gaps and Future Research Ad de Man | Water Authority Limburg and Chair Work Force Implementation Activated Carbon @ NL
- 12.15 Lunch Break**
- 13.15 Opening afternoon sessions: Overview Performances Innovative Technologies Activated Carbon and Non-Fossil Alternatives - Mirabella Mulder | STOWA / Mirabella Mulder Waste Water Management**
- 13.40 Session 2 – Innovation in Powdered Activated Carbon (PAC)**
Chair – Roger Vingerhoeds | Water Authority Brabantse Delta
- 13.45 Pilot Powdered Activated Carbon Nereda Activated Sludge – Sandra Malagon | Water Authority Limburg
14.00 Pilot PAC dosage and Cloth Filtration – Arnoud de Wilt | Royal Haskoning DHV
14.15 Using Non-Fossil commercially available PAC – Joost van den Bulk | Tauw
14.25 Measurement of PAC in effluent and effect of PAC on digestion – Herman Evenblij | Royal Haskoning DHV
- 14.40 Coffee Break**
- 15.10 Session 3 – Innovation in Adsorption onto New Fossil Free Materials**
Chair – Ruud Schemen | Water Authority de Dommel
- 15.15 Pilot Zeolites Adsorption– Jan Peter van der Hoek | Delft University of Technology
15.30 Pilot DEXSORB (Cyclodextrines) Adsorption – Jaïr Dan | Witteveen+Bos
- 15.45 Session 4 – Innovation in Granular Activated Carbon (GAC)**
Chair – Manon Bechger | Waternet (Water Authority Amstel, Gooi and Vecht)
- 15.50 Pilot Upflow GAC (CarboPlus and DynaCarb)– Alexandra Deeke | Water Authority de Dommel
16.15 Pilot BODAC (Discontinuous BioGAC)– Astrid Mous | WLN
16.30 Pilot Continuous Bio-GAC – Hans Wouters | Brightwork
- 16.45 Closing day 1 and preview program day 2 – Cora Uijterlinde | STOWA**



Program Thursday November 9th

- 10.00 Opening Aquatech Expo
10.00 Registration with coffee and tea
- 10.30 Opening and welcome day 2 and session 5 – Full-scale Implementation of Ozone in the Netherlands**
Mirabella Mulder | STOWA / Mirabella Mulder Waste Water Management
- 10.35 Full scale implementation of Ozone @ wwtp's Houten and Wervershoof – Marlies Verhoeven | Water Authority Stichtse Rijnlanden and Maaike Hoekstra | Water Authority Hollands Noorderkwartier
- 11.00 Implementation of Ozone: Lessons Learned, Knowledge Gaps and Future Research
Ruud Schemen | Water Authority de Dommel and Chair Work Force Implementation Ozone @ NL
- 11.20 Overview Performances Innovative Technologies day 2: Combinations with Oxidation**
Mirabella Mulder | STOWA / Mirabella Mulder Waste Water Management
- 11.45 Session 6 – Innovation in Combinations of Ozonation and PAC**
Chair – Robert Kras | Water Authority Aa and Maas
- 11.50 Pilot O3-STEP – Manon Bechger | Waternet (Water Authority Amstel, Gooi and Vecht)
- 12.05 Pilot PAC-O3 – Laura Piai | Royal Haskoning DHV
- 12.20 Lunch Break**
- 13.15 Session 7 – Innovation in Combinations of Ozonation and Biological Degradation**
Chair – Robert Kras | Water Authority Aa and Maas
- 13.20 Do's and Dont's in Implementing Ozone: Minimization of byproducts and bromate formation
Arnoud de Wilt | Royal Haskoning DHV
- 13.30 Pilot MicroForce – Nelis de Rouck | PureBlue
- 13.45 Pilot B-O3 – Arnoud de Wilt | Royal Haskoning DHV
- 14.00 Session 8 – Effects of Implementing Enhanced Removal of Micropollutants on Water Quality**
PFAS and Antibiotic Resistance Chair – Bert Palsma | STOWA
- 14.00 Do's and Don'ts in Sampling and Analysis to Determine Removal Performances – Bert Palsma | STOWA
- 14.20 Effects of Implementing Enhanced Removal of Micropollutants on Antibiotic Resistance
Imke Leenen | H2Oké
- 14.40 Effects of Implementing Enhanced Removal of Micropollutants on PFAS – Anja Derksen | Ad Eco Advies
- 15.00 Coffee Break**
- 15.30 Session 9 – Innovation in Combinations of Oxidation and Filtration and Natural Systems**
Chair – Bernadette Lohman | Water Authority Zuiderzeeland
- 15.35 Quick scan Natural Systems – Mirit Hoek | Tauw
- 15.55 Pilot Ozonation and Ceramic Filtration - Martin Spruijt | PWN-T
- 16.15 Pilot Nanofiltration and UV-treatment – Tom Weijtmans | Water Authority Aa and maas
- 16.35 Closing of the event – Cora Uijterlinde | STOWA**
- 16.45 Drinks and Bites**