WARM
White Ammonia and N-recovery Research Meeting
Wednesday 7th June 2023 – Brussels & hybrid
Draft programme

8h30 *Registration*

9h30 Welcome, housekeeping, objectives of this research meeting
Conclusions of ESPP N-recovery workshop (19th January), Olivier Bastin (ESPP)
Summary of SCOPE Newsletter n°147 "Selection of N-Recovery science", Chris Thornton (ESPP)

10h00 **Policy context**
Integrated Nutrient Management Action Plan (INMAP), Jeanne De Jaegher (DG ENV)

10h15 **Funding opportunities**
Horizon Europe, Bertrand Vallet (DG RTD)
LIFE, Federico De Filippi (CINEA)

10h45 - 11h15: break – posters – stands – networking

11h15 **Parallel sessions (list of speakers at p.2-3)**

1. Membrane & electrodialysis ammonia recovery
2. Ion exchange and adsorbents for ammonia capture in liquids
3. Different routes for nitrogen recycling (1) – *hybridised*

12h45 - 14h00: lunch

14h00 **Parallel sessions (list of speakers at p.2-3)**

4. Routes to concentrated or solid recovered N products – Olivier Bastin (ESPP), Laia Llenas Arguelaguet (BETA Technology Centre) – *hybridised*
5. N recovery from urine, manure, aquaculture – Wim Moereman (Akwadok)
6. Different routes for nitrogen recycling (2) – Robert Reinhardt (Algen), Elena Ficara (Politecnico di Milano),

15h30 -16h00: break – posters – stands – networking

16h00 **Report from parallel sessions**

16h25 **The INMS Nitrogen Measures Database**, Will Brownlie (UKCEH) - *online*

16h30 **What research is needed? Industry perspective**
Panel: Antoine Hoxha (Fertilizers Europe), Sagnotti Giulia (ACEA), Anna Lundbom (EasyMining), Marc Spiller (University of Antwerp), Andrew McLeod (Jacobs)

17h00 **Closing discussion: what research is needed?**

17h30 Conclusion and close

Confirmed Speakers for WARM Parallel Sessions

Parallel session 1: Membrane and electrodialysis processes

- Membrane-based concept to recover ammonia from industrial liquid side streams – *Hannah Kyllonen, VTT*
- Recovery and concentration of nutrients for hydroponics from centrate with electrodialysis and upstream nitrification in a membrane bioreactor – *Anna Hofmann, Fraunhofer Institute for Environmental, Safety, and Energy Technology UMSICHT*
- Detricon's LIFE INFUSION pilot results – *Wouter Naessens, Detricon*
- Membrane-enhanced stripping for ammonium recovery from pig slurry liquid fraction – *Xialei You Chen, Leitat Technological Center*
- Recovery of ammonia by membrane chemo-sorption from concentrated and dilute streams – *Lex van Dijk, Colubris Cleantech BV*
- Chemical-free ammonium recovery from reject water using bipolar membrane electrodialysis (BPMED) - *Gladys Mutahi, TUDelft*

Parallel session 2: Ion exchange and adsorbents for ammonia capture in liquids

- Ionic liquid-based sorbents for NH_3 capture and recovery – *Jose Francisco Palomar Herrero, Universidad Autónoma de Madrid*
- Ammonia removal and recovery from municipal wastewater – *Hacer Sakar, Cranfield University*
- Geopolymers for ammonium removal and recovery: state of the art and perspectives - *Daniela Pinto, Università degli Studi di Bari*
- Application of nitrogen recovery to produce Smart bio-based fertiliser – *Alicia Gonzalez Miguez, Cetaqua - WALNUT Project*
- Ion exchange for N-removal after a high-loaded municipal waste water treatment plant – *Elisabeth Vaudevire, PWNT*

Parallel sessions 3: Biological routes for N-recovery: growing algae, monocellular protein (hybrid)

- Microalgae-based ammonium recovery from wastewaters and digestates – *Robert Reinhardt, Algen*
- Microalgae-based bioremediation as an alternative to conventional activated sludge processes – *Elena Ficara, Politecnico di Milano*
- Large scale algal treatment of municipal wastewater – *David Fernando, Aqualia*
- MicroAlgae 4.0: Green microalgae for urban wastewater remediation and nitrogen recovery – *Josué Gonzalez-Camejo, Università Politecnica delle Marche*
- Biological recovery of N from wastewater using duckweed – *Reindert Devlamynck, Inagro*
- Hydroponic cultivation of plants based on N-rich waste streams – *Øyvind M. Jakobsen, CIRiS*
- Results update from SABANA projects – *Francisco Gabriel Acien Fernandez, European Algae Biomass Association (EABA)*

Parallel session 4: Routes to concentrated or solid recovered N products (hybrid)

- Freeze concentration as potential technology to concentrate diluted ammonium salt solutions – *Nagore Guerra Gorostegi, BETA Technological Center*
- Nitrogen recovery in the LIFE RE-FERTILIZE project (Aqua2N) – *Anna Lundbom, EasyMining*
- Recovering nitrogen from wastewater as a concentrated liquid using (bio)electroconcentration – *Veera Koskue, University of Melbourne*
- Regenerative NO_x Removal from Industrial Sources – Status and Outlook – *Alexander Krajete, Krajete*
- Possible routes and challenges for small-scale N-recovery to products adapted to industry or farmer use – *Willem Schipper (industry consultant) and Céline Vaneeckhaute (University of Laval)*

Parallel session 5: N recovery from urine, manure, aquaculture

- Nitrogen recovery from urine in research and practice – *Kai Udert, Eawag*
- Life cycle assessment of bio-based fertilizers from fisheries and aquaculture sidestreams – *Jan Landert, Research Institute of Organic Agriculture FiBL*

Life Cycle Analysis (LCA) of the NPHarvest process, and of struvite precipitation + ammonia stripping – *Juho Kaljunen, Aalto University*
Optimization of ammonia recovery from urine and digestate using transmembrane chemical absorption – *Mathieu Sperandio, Institut national des sciences appliquées de Toulouse*

Parallel session 6: Different routes for nitrogen recycling

How can we possibly resolve the planet's nitrogen dilemma? – *Wim Moerman, Akwadok*
Practical results of N-recovery from municipal wastewater – *Gertjan Buffinga, Byosis*
SYREN - Acidifying slurry to minimise ammonia emission – *Morten Toft, BioCover*
Treating and Recovering Nitrogen from digested sludge – two cases from the Netherlands – *Herman Evenblij, Royal HaskoningDHV*