



1 Editorial

Dear readers,

We are pleased to present you the 1st DEMEAU newsletter, which delivers insights and shares developments within the DEMEAU FP7 project. The newsletter is distributed through our network that reaches a broad target audience including water practitioners, researchers, policy-makers and the media. However, we always appreciate it if you forward our newsletter to interested colleagues. If you do not yet receive our newsletter automatically and are interested, please write to us with the subject "newsletter subscription" to mail@demeau-fp7.eu or visit our homepage www.demeau-fp7.eu where you can subscribe.

Within this first issue of the DEMEAU newsletter, we will present an introductory interview with our project coordinator, Theo van den Hoven. The interview with Theo frames the project in light of a changing environment and the changing needs of the water sector. In a subsequent article, we will present the project and its objectives, and the current achievements will be portrayed in a timeline. The progress in the different Work Areas (WA) will be presented separately.

In this first newsletter, we start our series of presenting members of the Project Advisory Committee and their vision of DEMEAU's impact. Here, we feature an interview with Fred Leusch on his expertise in the field of bioassays and their implementation in regulative directives. We also provide an overview of project outputs and publications that project members have already produced.

Within the section Utility Updates, a quick insight is given on the visit of the Neugut wastewater treatment plant and the Zurich water works during the Ecohazard and Micropol conference in June 2013. The Featured Image shows a snapshot which presents a project-related issue, in this issue a glimpse into the ozonation process at Zurich Water Works. The newsletter ends with an overview of past and future events.

Please feel invited to visit our website, which gives further details on the DEMEAU project. All finalised public deliverables can be downloaded there. If you are present at one of the conferences where DEMEAU partners present their findings, feel free to get in touch with us!

If you have recommendations to improve our website or newsletter, would like to explore the opportunity to cooperate or if you have questions, please do not hesitate to contact us (mail@demeau-fp7.eu).

All the best,
Your DEMEAU Team

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2 Interview with Theo van den Hoven, coordinator of FP7 DEMEAU

DEMEAU's project coordinator is Dr. Theo van den Hoven, who is manager of the international research programme at KWR Watercycle Research Institute, the Netherlands. Within the project TECHNEAU, which preceded DEMEAU, Theo van den Hoven was active and attuned to the needs and challenges of the water sector and suitable innovative technologies. As a member of the board of directors at the Global Water Research Coalition GWRC, the European Water Platform WssTP and ACQUEAU, the EUREKA Cluster for growth and innovation in the water sector, he is in tune with the sector's pulse. In this interview, he will explain the answers to the questions that DEMEAU strives to answer.

Interviewer: In the future, water management will face severe uncertainties in terms of quantity and quality. How will DEMEAU contribute to tackling this situation?

Theo van den Hoven: Indeed the water sector is facing huge challenges driven by demographic and climatic changes, as well as pressures for more efficient and sustainable solutions and services. DEMEAU addresses the challenge of micro-pollutants in water and waste water. Previous EU-funded projects have delivered many novel and promising solutions to lower the level of emerging pollutants, but many of these solutions are not yet implemented in operational practices and policies.

Apart from building convincing technological references, an important objective of the project is to enhance acceptance of the innovations by regulators and operators. An example is the application of bioassays as risk assessment tools in operational and regulatory frameworks.

DEMEAU wants to demonstrate the promising effects of four chosen technologies. Why does DEMEAU focus on these technologies? Aren't there more to be promoted?

We focus on solutions with a proof of principle derived from previous projects, but which are not yet applied to their full potential in practice. This is partly because barriers to market penetration have not been addressed effectively or regulations hinder the implementation in practice. The project tries to address these barriers to further implement these solutions. Furthermore, appearing from the willingness of utilities to act as first user in DEMEAU, DEMEAU's technologies are in the broad interest of utilities in Europe and beyond. A good example is provided by oxidation-based processes. We have utilities from Switzerland, Germany and the Netherlands on board who are actively working on the implementation of oxidation-based technologies to enhance the treatment capacity for micro-pollutants. Another aspect that the chosen technologies offer is the perspective for the technology providers to access a broader market. Having this guaranteed, the project's expenses are likely to yield the targeted revenues in the future.

The four technologies can be implemented in single use or in combination with each other. Are any synergies deployed as a result of the integrated use?

This depends on the specifics of the engaged utilities. Where possible, we exploit synergies. An example is the combination of MAR and advanced oxidation, which we explore at Dunea. The oxidation treatment may produce unwanted byproducts, which hopefully will



be fully degraded in the subsequent underground processes of the MAR process.

Looking at the innovation cycle, DEMEAU is currently in the demonstration phase, having completed research and initial testing but missing uptake in the market. What do you expect from the project?

Most of the utilities associated with DEMEAU are already well engaged and active in implementing solutions that DEMEAU is promoting. This gives the related SME's strong references to market their technologies outside of the DEMEAU utilities.

A separate part of DEMEAU is devoted to identify and stress the Unique Selling Propositions of the solutions, including performance, environmental impact and total costs of operation. These USPs are input for promotional events to support the uptake in a broader market.

DEMEAU's research focuses on case studies in Germany, Switzerland, the Netherlands and Spain, mainly in the temperate regions of Europe. Will it be possible to extrapolate the information won on the technologies to other operating conditions, especially in the more arid regions like Greece, Italy or Portugal?

If the technology works in Zurich, in principle, it should also work at other places. Of course adaptation to the local conditions is needed. For this purpose, we will come up with information and guidelines for successful local application. Examples are protocols to deal with legislative barriers for MAR and bioassays and enabling / constraining factors for the DEMEAU technologies. Interested users will be able to translate the DEMEAU outcomes to their specific situation in terms of performance, costs and sustainability. They will receive first-hand information on the demonstrated technologies through dissemination events at the launching utility.

In your view, what are the biggest challenges to the implementation of DEMEAU's technologies, or why aren't they implemented already?

Regulatory acceptance for the bio-assays and, in some regions, also for MAR schemes is a major barrier for the implementation of these technologies. Of course we are not able to overcome these barriers on our own, but we will develop strong evidence of their added value and roadmaps for implementation to inform decision makers.



3 Short project presentation

The water and wastewater sectors face tremendous challenges to assure safe, cost-effective, and sustainable water supply and sanitation services. Detecting and treating emerging pollutants has become a critical need in these sectors. Innovative technologies could hold the key to solving these challenges.

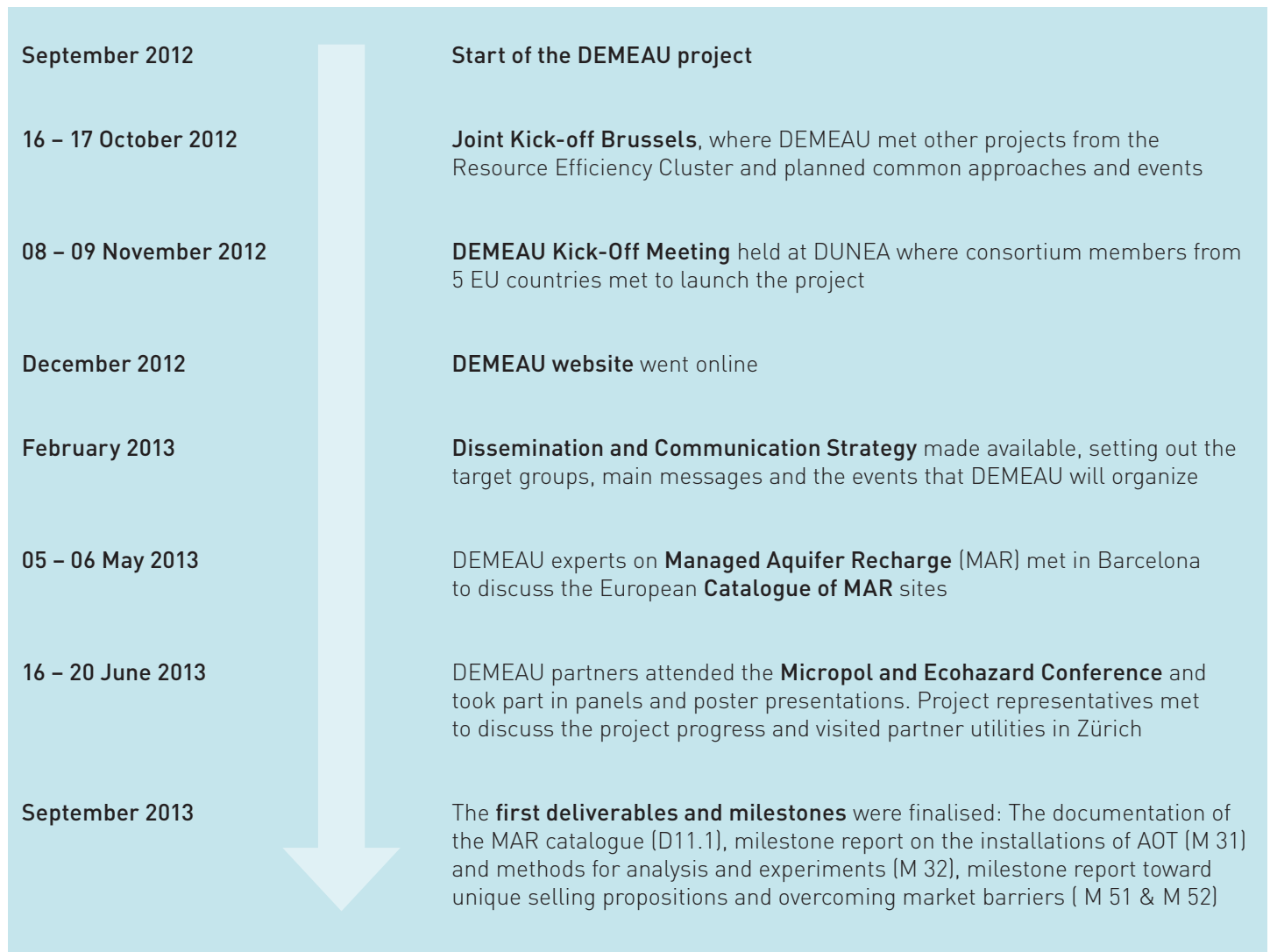
DEMEAU is a three-year EU FP7-funded project to demonstrate promising technologies that tackle emerging pollutants in water and wastewater. DEMEAU provides environmental impact and costs assessments (i.e. life cycle assessment and life cost assessment) and showcases four technologies: managed aquifer recharge, hybrid ceramic membrane filtration, hybrid advanced oxidation and bioassays. The objective of DEMEAU is to demonstrate

the suitability and cost-effectiveness of innovative methods and technologies to reduce levels of emerging pollutants in water and treated wastewater. Through its partnership with research institutions and water utilities, DEMEAU demonstrates these technologies at launching sites and addresses barriers to their market implementation.

To support the market penetration and broader application of innovative methods and technologies in the water and wastewater sectors, DEMEAU cooperates with relevant policy makers, regulators, and standardisation bodies as well as with technology producers and users on the national and EU level. The DEMEAU consortium consists of 17 members from five EU countries and is led by KWR Watercycle Research Institute (NL).

4 Current achievements

4.1 Timeline





4.2 Progress and achievements

Managed Aquifer Recharge (MAR)

Objective: develop recommendations for the authorization of European MAR sites in line with the current EU environmental legislation

Achievements since September 2012: A catalogue of 270 existing European MAR sites as well as a decision tree for the evaluation of impacts by MAR activities have been developed.

Highlight: Catalogue of 270 Managed Aquifer Recharge sites in Europe

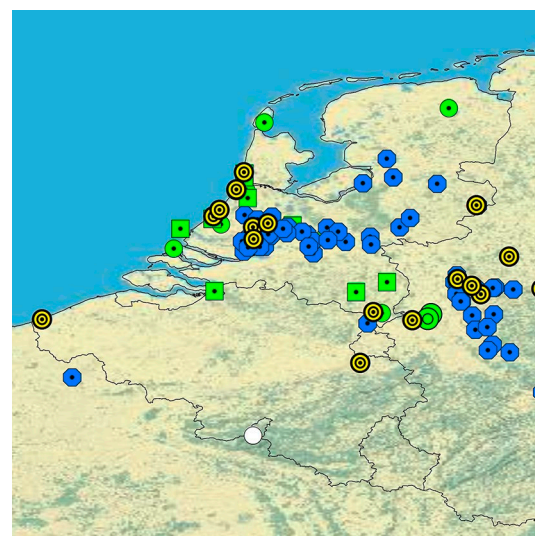
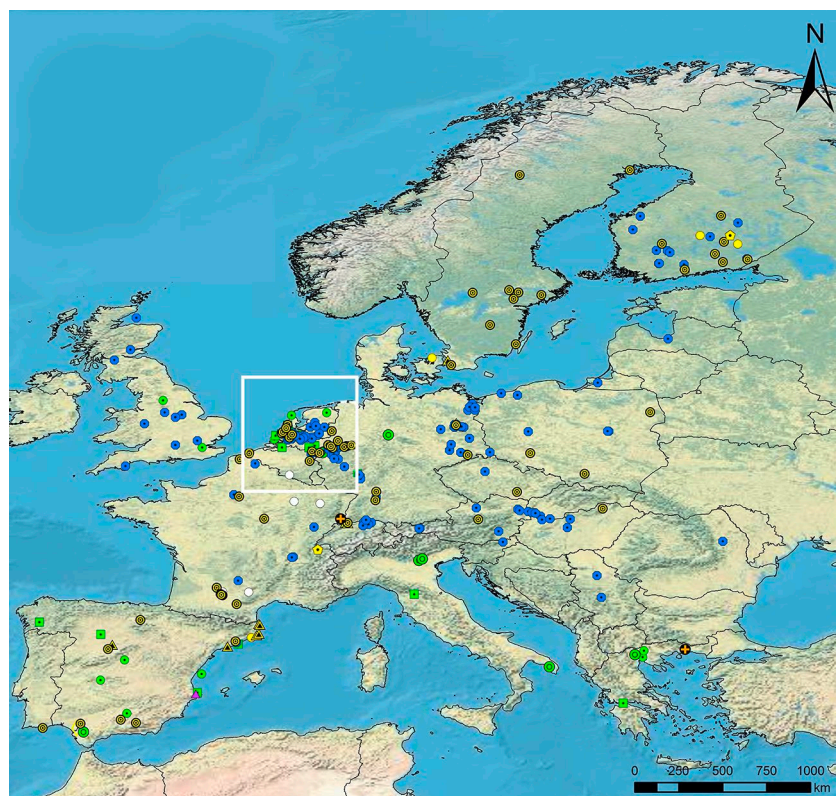
DEMEAU project partners from Germany, the Netherlands and Spain developed a catalogue of 270 European MAR sites, integrating data and information available online. The aim of the Catalogue is to compile existing information in a coherent and comparable database and to highlight MAR as a widespread technology across Europe.

A maximum number of 44 parameters were included per site, and the locations are spread throughout Europe. The final version of the database will be transferred to the IGRAC (International Groundwater Resources Assessment Center) in Delft for inclusion in their web-based MAR information service.

Based on an in-depth statistical analysis, DEMEAU will classify MAR sites in Europe and carry out a detailed risk assessment of selected sites. The risk assessment will use criteria for planning and operating MAR schemes, and it will have a special focus on emerging pollutants in the next phase of the project. In addition, an overview of current worldwide regulations for MAR authorization and a decision tree for assessing emerging substance removal is currently underway, focusing on key parameters such as the sorption capacity of the sediment, temperature and other site-specific parameters.

The ongoing work will allow making recommendations for the authorization of European MAR sites in line with the current EU environmental legislation such as the Water Framework Directive and the Groundwater Directive.

One example of a site is the Sant Vicenc dels Horts MAR facility, using the aquifer of the Llobregat River. This system has been recently improved through the installation of a reactive organic layer in the bottom of the infiltration pond, which enhances the effectiveness of emerging pollutant elimination as part of a LIFE+ ENSAT project. The Llobregat aquifer is considered a strategic resource for the water supply in the Barcelona metropolitan area, and the facility forms part of the actions carried out by the regional water administration to fight against water scarcity in the area.



MAR sites included in the Catalogue

Legend

Specific MAR types in Europe

- unknown
- induced bank filtration
- ▲ rainwater harvesting

In-channel modifications

- recharge dams

Spreading methods

- reverse drainage method
- infiltration ponds & basins
- excess irrigation
- ◇ ditch and furrow
- ▲ flooding

Well, shaft and borehole recharge

- aquifer storage transfer and recovery
- aquifer storage and recovery
- dug well / shaft / pit injection



Hybrid ceramic membrane filtration (HCMF)

Objective: DEMEAU's work on HCMF aims to increase the application of ceramic membrane filtration in water treatment and focuses on four aspects:

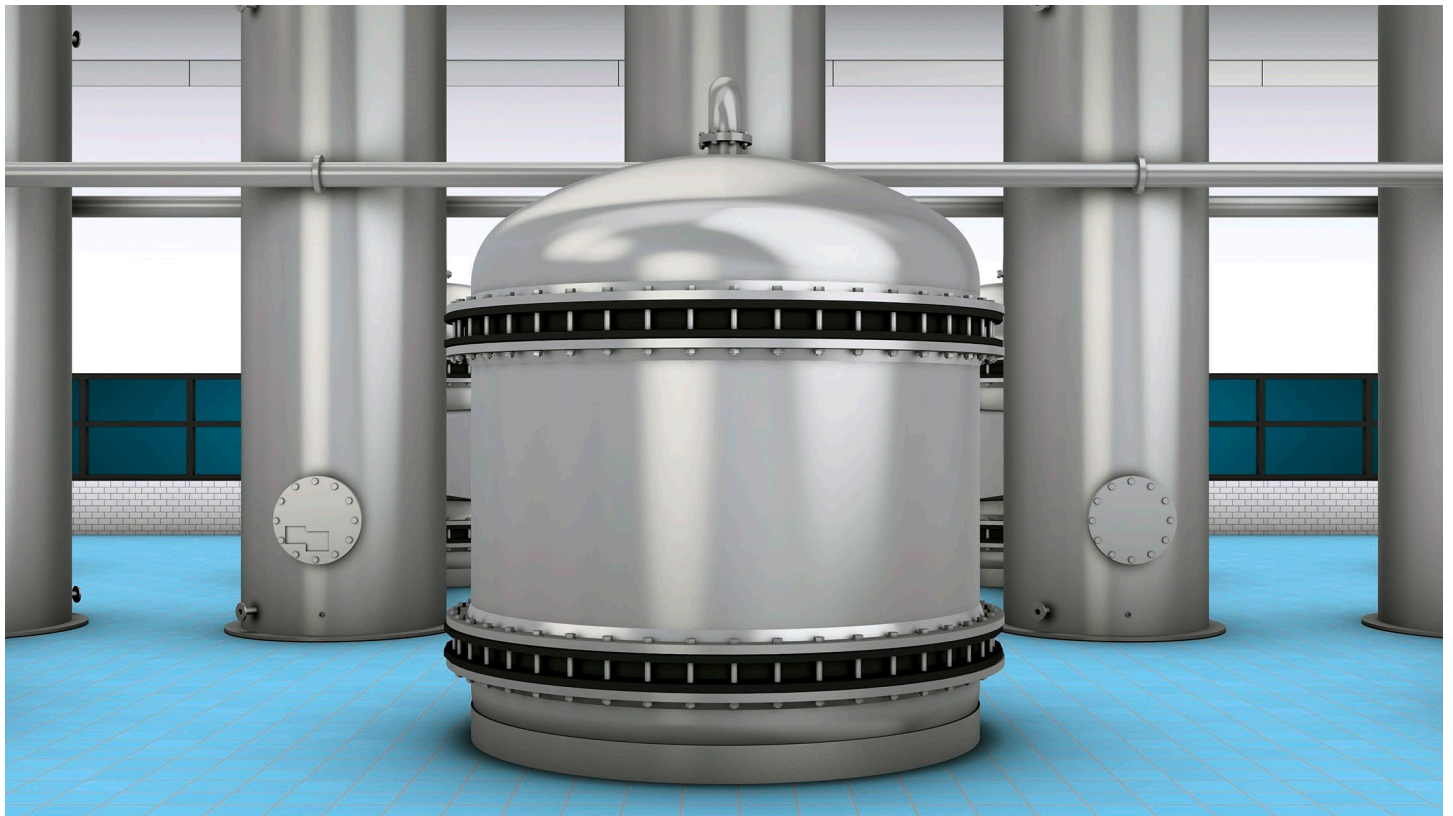
1. Support the upscaling of the CeraMac® design of PWN Technologies
2. Demonstrate hybrid ceramic membrane systems
3. Adapt automatic neural net control systems to the needs of large-scale processes
4. Demonstrate nanoparticles analysers based on Laser-Induced Breakdown Detection to determine the removal capabilities and on-line integrity of membranes

Achievements since September 2012: The first improved model of the bottom plate of the CeraMac® reactor is currently being tested and validated in a pilot system. For the neural net control systems, an interface was developed, and tests with an ultrafiltration pilot system were recently started. A prototype of the LIBD-monitoring system is currently being calibrated, and a test protocol for the qualification tests (including nanoparticles, feed waters, membranes and measurements) has been developed.

Lab-scale pilot testing will commence in the coming months.

Highlight: Further development of the CeraMac® reactor

The design of the CeraMac® reactor is highly innovative and cost-effective, through combining 192 membranes in one vessel and reducing steel and valves. In addition, a bottom plate has been developed that can better withstand high pressures during back-washing



The CeraMac® reactor (www.pwntechnologies.nl)



Advanced oxidation (AOT)

Objective: full-scale validation and controlling of the technologies to ensure the long-term stability and robustness of the processes, thereby facilitating uptake of the technology

Achievements since September 2012: In October 2012, construction of the first full-scale site in Switzerland for advanced treatment of wastewater with ozone was completed at the WWTP Neugut. Other significant achievements include: development of a common list of compounds for future experiments and experiments on transformation product and by-product formation. Also, the milestone report on the installations of the technologies at the demonstration sites (M 31) and on the developed methods for chemical analysis and for laboratory batch experiments (M 32) was published.

Highlight: IUVA World Congress: Formation of possibly mutagenic byproducts in UV processes

From 22–26 September 2013, the World Congress of the International UV Association (IUVA) took place in Las Vegas. Roberta Hofmann-Caris (KWR Watercycle Research Institute) presented findings from research within DEMEAU at the World Congress. Previous research had shown that in UV/H₂O₂ processes based on Medium Pressure (MP) UV lamps, such byproducts may be formed. Therefore, an extensive research program started following two lines of investigation:

- What happens during UV disinfection in full-scale production plants?
- Which process parameters are involved in the formation of possibly mutagenic byproducts?

To scrutinise UV disinfection, different UV doses with either Low Pressure (LP) or MP UV lamps were tested in six different Dutch full scale plants, processing groundwater, surface water and bank filtrate. The water samples were tested by means of the Ames fluctuation Assay for the occurrence of toxic byproducts. It was found that with LP lamps, no increase in Ames response could be observed. For MP lamps at increased UV doses (up to 200 mJ/cm²), the Ames response increased. This does not necessarily mean that the byproducts, which are formed under these circumstances, are mutagenic for humans. However, further research may be required.

In the second line of investigation, it was found that the formation of possibly mutagenic byproducts indeed strongly depends on the type of UV lamps applied. For LP lamps, hardly any response was observed in Ames assays. For MP lamps, the Ames response appeared to depend on the UV dose applied, as well as the concentrations of hydrogen peroxide, nitrate and natural organic matter (NOM). It was concluded that possibly mutagenic byproducts may be formed by photolysis of both nitrate and NOM.

The findings are in accordance with two other presentations at the IUVA World Congress. Many researchers emphasized that it would be very interesting and important to know more about the role that different fractions of NOM play within this process. Further research in this field would be necessary.

Please find more information on the cited presentations on the website of the congress <http://www.worldcongress2013.org/>. Contact Roberta Hofman-Caris (Roberta.Hofman@kwrwater.nl) if you have questions regarding this research.



Foundation stone ceremony at WWTP Neugut on 2 October 2012

©Marc Böhler



Bioassays (BA)

Objective: provision of a generic roadmap to the implementation of innovative bioassays in the water sector and addressing existing barriers for implementation.

Achievements since September 2012: Selection of a limited panel of tests that will be put forward for regulatory acceptance, i.e. CALUX reporter gene assays measuring endocrine disrupting (androgenic and estrogenic compounds). Involvement of WA4 in a DIN/ISO and several OECD working groups, and collaboration with the US-EPA National Centre for Computational Toxicology.

Highlight: Publication of a scientific article: Putting in vitro bioassay results in perspective – a concept for deriving human health based bioassay trigger values by Merijn Schriks

The application of in vitro bioassays receives increasing attention for water quality assessment. A major advantage of bioassays is that they provide an integrated biological response concerning e.g. hormonal activity in environmental waters and (sources of) drinking water. To integrate bioassays into legislation and into the practice of risk assessment for water supply, adequate limit values are needed.

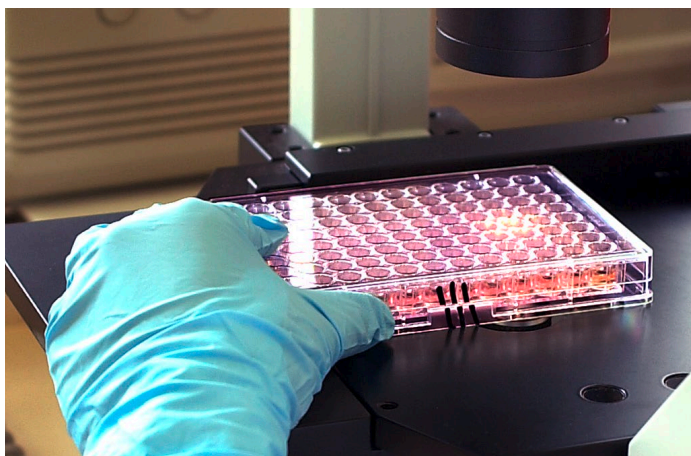
Results of the study

The aim of the present research was to derive novel, so-called trigger values for a selection of five in vitro bioassays. Within the study, bioassay trigger values ranging from ~4 to ~330 ng hormone equivalents/L were established for estrogens, androgens, glucocorticoids and progestagens, respectively. Benchmark quotient (BQ) values were calculated, which provide the ratio between the trigger value and the environmental concentration. The results show that none of the measured biological activities exceed the bioassay trigger value, thus indicating relatively low concern for human health.

Discussion and major conclusions

A number of bioassay trigger values were derived for a selection of CALUX bioassays. Trigger values for drinking water are useful tools to decide whether measured concentrations are of any priority with respect to health concerns in humans. They can be used as conservative thresholds in risk assessment of drinking water.

Based on the highest concentrations detected in surface water in a limited screening study of Dutch water samples, it was demonstrated that health risks are not to be expected if consumed as drinking water.



Bioassay testing

© BioDetection Services

Read about the study's methodology here:
<http://demeau-fp7.eu/news/179>

The study was published in Environment International:
Brand, W., de Jongh, C. M., van der Linden, S. C., Mennes, W., Puijker, L. M., van Leeuwen, C. J., van Wezel A. P., Schriks M. & Heringa, M. B. (2013).

Trigger values for investigation of hormonal activity in drinking water and its sources using CALUX bioassays. Environment international, 55, 109-118.



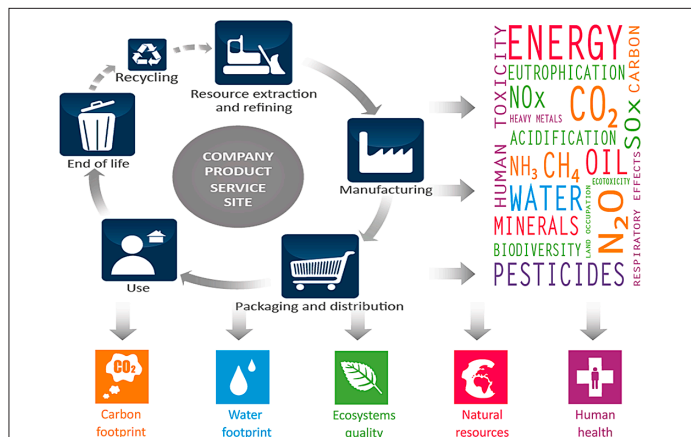
Life Cycle Assessment

Objective: Exploration of the sustainability of the selected technologies based on environmental, economic and social aspects as a basis for fostering market uptake.

Achievements since September 2012: The case study information leaflet describes WA5 and its task (Life Cycle Assessment, Life Cycle Costing, barriers and enabling factors and unique selling propositions), which are aimed at technology managers and implementers. A draft of an excel data collection template for LCA and LCC to inform about data needs was prepared. Selection and initiation of case studies.

Highlight: Approach to Sustainability Assessment and Unique Selling Propositions

DEMEAU WA5 will propose technology-specific routes to market uptake for each of the DEMEAU technologies, based on a thorough sustainability and barrier analysis. Case studies that portray the different technologies form the basis of the sustainability analysis and range from pilot-scale to full-scale implementation. Eventually, WA5 will design unique selling propositions as the result of the analysis. The analytical framework is based on the three generally accepted pillars of sustainability - environment, economy and society - which is reflected in three different types of analyses.

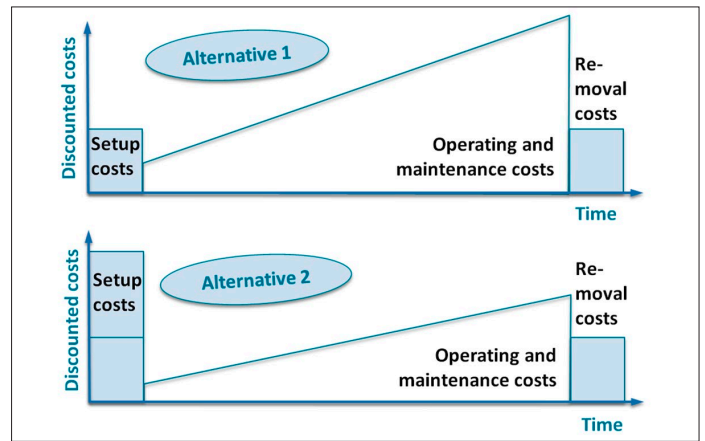


LCA to assess environmental sustainability

© Quantis

Environmental Life Cycle Analysis (LCA) quantifies potential environmental impacts and benefits of DEMEAU technologies. It analyses the entire life cycle on the basis of process data from case studies and compares these to existing reference technologies (whenever applicable). A key feature of the LCA in DEMEAU is the emphasis on portraying the potential of each technology to remove micro-pollutants and thus to remove eco-toxicological impacts. For this purpose, the LCA includes additional 'characterization factors' that are being developed for the investigated micro-pollutants.

Economic Life Cycle Costing (LCC) assesses all costs related to a product or service over the entire life cycle, from production to use and disposal. This is especially

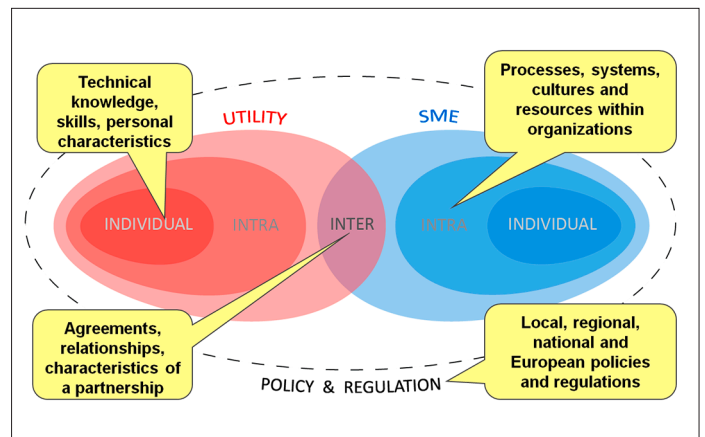


LCC to assess economic sustainability

© IWW

relevant for technologies that have long life times and/or high maintenance, use or disposal costs, which apply to many water technologies. Whereas LCA covers the ecological aspects of sustainability, LCC can serve to address the economic dimension of sustainability and is an important instrument to support an integrative decision making at the utility level.

The social dimension focuses on enabling and constraining factors for the implementation of technologies, i.e. drivers and barriers derived from interviews and expert meetings with stakeholders, such as utility operators and technology providers.



Analysis of the social dimension of sustainability

© KWR

The analysis integrates individual (utilities), intra- and inter-organizational, policy and regulatory levels (see image above). To foster the implementation, an analysis of application areas, technology-relevant stakeholders and barriers will be conducted.

A first overview is presented in first milestone report delivered in September 2013.

For information on the second part of the Milestone report, please read the news story "Application areas, Stakeholders and Implementation Barriers of DEMEAU Technologies" on the DEMEAU website: <http://demeau-fp7.eu/news/215>



DEMEAU's showcase to the outside world

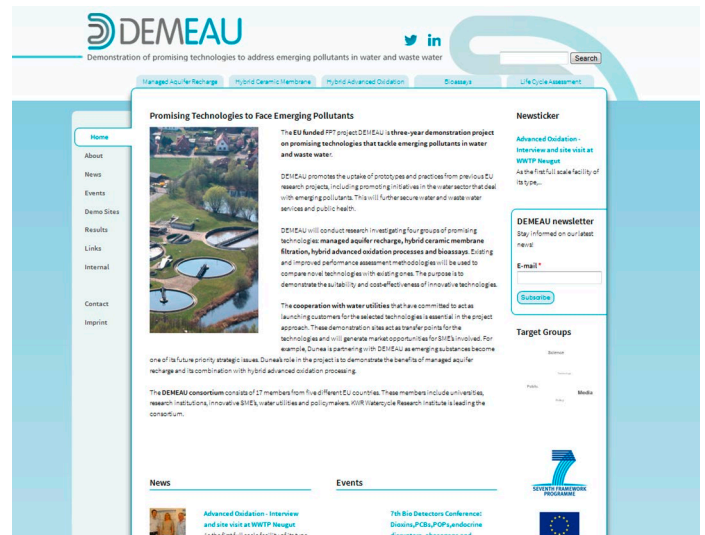
Objective: WA6 ensures a successful dissemination of project results to all relevant stakeholders and thus facilitates the use and exploitation of the technologies. The dissemination team applies a variety of media such as the project website, twitter and LinkedIn discussions and videos to promote DEMEAU technologies. It also supports the utilities with the organization of demonstration events.

Achievements since September 2012: A detailed dissemination strategy, the project's corporate identity, a website with developed content, dissemination materials and channels have been prepared.

Highlight: The work to establish DEMEAU's dissemination strategy, the communication materials and channels has been a large, on-going effort. DEMEAU's showcase to the outside world is its website, which functions as a repository for all information created during the project. The dissemination channels are equally important, as the information will only reach the target groups if a strong network is established.

The dissemination team regularly posts the highlights in the project. To stay up-to-date:

- Visit the website: www.demeau-fp7.eu
- Follow us on Twitter: @DEMEAUF7



Screenshot DEMEAU website

- Join the discussion in our LinkedIn group: DEMEAU - technologies to address emerging pollutants
- Sign-up to receive the newsletter by sending an email to: mail@demeau-fp7.eu

Project Management

DEMEAU organized its kick-off meeting in early November 2012 on the premises of the water supply company Dunea in the Hague, NL. Dunea is one of the associate partners involved in DEMEAU, and it is one of the Dutch drinking water companies that uses sand dunes for infiltration of pre-treated river water as a step towards production and distribution of drinking water. Since the kick-off meeting, several project meetings have been organized at the Work Area-level on specific topics. A cross-cutting issue during the first months of the project was the definition of a list of priority compounds, which forms the basis for the research activities for all technologies.



Joint Work Area 3 and 4 meeting in Zurich, June 2013

© Johanna von Toggenburg



5 The Project Advisory Committee: DEMEAU guided from outside

The Project Advisory Committee (PAC) is the eye to the outside world of the DEMEAU project. The PAC supports the project by linking it to international networks to enhance the project's impact. It also advises the project team in its approach to research and outreach by providing expertise in different sectors. PAC members are: Helge Daebel (Innovation), Frans Schulting (Water Research), Thomas Ternes (Emerging Pollutants), Rüdiger Wolter (Regulation) and Frederic Leusch (Bioassays and policy integration)

In this first issue, we present the input of Frederic Leusch on bioassays. Watch an interview with Dr. Leusch on this topic: http://demeau-fp7.eu/PAC_BA_videotriggervalues.

Due to the adoption of the water recycling guideline, Australia has already made advances in the acceptance of the use of bioassay for risk assessment in water quality questions. In an interview, Frederic Leusch explains the advantages and shortcomings that still need to be addressed in Australia and in Europe.



Dr. Frederic Leusch

Bioassays are a useful tool in assessing mixtures of chemical compounds in an environmental medium such as water. They can assess the toxicity of such mixtures, regardless of their composition. This is advantageous over regular chemical analyses, as those methods can only detect what is being looked for. Environmental samples are complex mixtures of chemicals, which include emerging pollutants. Bioassays test whether these mixtures of partially unknown compounds are toxic to biological organisms or not.

Having understood this advantage, it is inevitable to ask why bioassays are not more commonly used in risk assessment. Currently, the major limitation of these tools is that a threshold for toxicity still needs to be defined. This threshold, or "trigger value", can eventually be integrated into policy guidelines for risk assessment of water quality. Researchers have made advances in this regard during the last year, and a practical solution seems close.

Apart from the lack of clearly defined trigger values, there are also political and regulatory barriers to overcome. Environmental guidelines mainly include maximum allowable concentrations of specific individual compounds. Due to the ever increasing number of new and emerging substances in our environment, most of which are still of unknown toxicity, the current chemical-by-chemical approach has significant gaps. Policy makers need to be made aware of this issue. The DEMEAU project will effectively engage policy makers and thus pave the way for an integration of bioassays as risk assessment tools and, potentially, regulatory instruments.

Dr. Leusch is programme leader for "Water Quality and Diagnostics" at the Smart Water Research Centre as well as senior lecturer at the School of Environment at Griffith University in Brisbane, Australia. He was invited to join the DEMEAU team as official member of the Project Advisory Committee due to his continuous support of the bioassay Work Area.

For further information: Escher BE and Leusch FDL (2012). Bioanalytical tools in water quality assessment. With contributions by Chapman HF and Poulsen A. IWA Publishing, London, UK. 253 pp.



6 Project outputs and publications

Project reports and DEMEAU Publications

DEMEAU (2013) D11.1: Development of a catalogue on European MAR sites;
Documentation. F. Scheibler, C. Sprenger, E. Vilanova & M. Hernandez Garcia.
http://demeau-fp7.eu/MAR_catalogue · <http://demeau-fp7.eu/D111>

DEMEAU (2013) D61.1: Dissemination and communication strategy.
J. von Toggenburg, M. Lange, B. Goeller & U. Stein.
<http://demeau-fp7.eu/content/dissemination-and-communication-strategy>

Posters and Leaflets

Schriks, M., van der Linden, S., Hebert, A., van der Oost, R., Leusch, F., Kienle, C., van der Burg, B., (2013)
Implementation of novel rapid and quantitative bioassays for water quality monitoring
DEMEAU project poster presented at the Micropol and Ecohazard Conference in Zürich and on the XI Symposium on Micropollutants in Human Environment in Wisla , Poland.
http://demeau-fp7.eu/WA4_poster_implementationBA

Hofman-Caris, R., Harmsen, D., Beerendonk, E., Wols, B., Siegers, W., H. Knol, T., Cornelissen, E.R.(2013)
Comparison of different technologies for the removal of pharmaceuticals from drinking water
DEMEAU project poster presented at the Micropol and Ecohazard Conference in Zurich, Switzerland.
http://demeau-fp7.eu/WA3_poster_comparison

Hofman-Caris, C.H.M., Harmsen, D.J.H., Beerendonk, E.F., Wols, B.A., Puijker, L.M., Keltjens, L.L.M. (2013)
Effect of UV and UV/H2O2 process conditions on Ames fluctuation assay response;
presentation at the IUVA World Conference in Las Vegas, United States and the XI Symposium on Micropollutants in Human Environment in Wisla, Poland.
http://demeau-fp7.eu/WA3_Wisla_092013

ter Laak, T. & Hofman-Caris, C.H.M. (2013)
Occurrence and fate of pharmaceuticals and transformation products in the aqueous environment
presentation at Ecohazard and Micropol conference in Zurich, Switzerland.
http://demeau-fp7.eu/WA3_poster_occurrence

Scheibler, F., Hannappel, S., Huber, A., Hernandez Garcia, M., Vilanova, E., Kumar, S., Grützmacher, G., Sprenger, C. (2013)
Development of a European MAR catalogue
presentation at the ISMAR8: Managed Aquifer Recharge: Meeting the Water Resource Challenge in Beijing, China
http://demeau-fp7.eu/WA1_poster_ISMAR8

Publications by project partners

Brand et al. (2013)
Trigger values for investigation of hormonal activity in drinking water and its sources using CALUX bioassays,
Environment International (2013) 55:109-118).
<http://demeau-fp7.eu/news/180>



7 Utilities Update

The WWTP Neugut in Dübendorf, Switzerland, cleans the wastewater from Dübendorf, Dietlikon, Wangen-Brüttisellen and Wallisellen. The Neugut plant will be the first full-scale ozonation facility at a municipal WWTP in Switzerland. Beside the conventional treatment (mechanical, biological, phosphate removal and sand filtration), this additional step enables the reduction of micropollutants to protect the river Glatt. At the existing Neugut plant, space was very limited and technologies to address emerging pollutants such as powdered activated carbon, which need more space, were not an option. The ozonation technology was adapted to fit the available space and attention was paid to reduce its footprint through low-energy processes (reduced pumping). Post-treatment options will be investigated to identify the best option for treatment after ozonation to eliminate transformation products, beside the existing sand-filter.

Currently, the construction is finished and the mechanical installation has started. The launch of the ozonation operation is expected for early 2014. The Neugut plant is a tailor-made application developed in cooperation with Eawag and the surrounding municipalities to protect the water quality of the nearby river and wells. DEMEAU accompanies the operation of the ozonation at the WWTP Neugut, observing barriers and promoting examples of the application of this innovative technology.

On 20 June, DEMEAU partners visited the treatment plant. Watch the video here:
http://demeau-fp7.eu/WA3_videoneugut

Water Works Zurich - Lengg water plant

The water works of Zurich is a municipal enterprise. It is and has been an optimal testing field for innovative technologies. Currently, 70 % of the water stems from Lake Zurich and 15% from springs and groundwater, respectively. In the frame of the Micropol & Ecohazard Conference, the Lengg water plant was visited. The plant purifies the lake water that is collected 30 m below the lake's surface. Although the extracted water has almost drinking water quality, it runs through a 5 step treatment process: Pre-ozonation, two-layer rapid sand filtration, intermediate ozonation, activated carbon filter and slow sand filtration. Many of the applied techniques are highly relevant to DEMEAU. At the visited site, a new process combination using ultrafiltration, ozonation, activated carbon filtration and UV is being tested in a pilot plant.



Site visit at WWTP Neugut and examination of the construction site for the full scale ozonation facility

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8 DEMEAU events calendar

Type of event and topic	Organising partners	Location	Preliminary date
2013			
Local workshop on bio-assays with small-scale demonstration on technical aspects in laboratories	BDS, Waternet	Netherlands	November 2013
Workshop/ Utility event on MAR	KWB, BWB, Ecologic	Berlin	2013/12/05
2014			
Utility event on ceramic membranes with Ceramac demonstration	RWB, PWN, KWR, Ecologic	Netherlands	Spring 2014
Utility event on oxidation, demonstrating the large scale Ozonation at Neugut	Eawag, Neugut, Ecologic	Zürich, Switzerland	Summer 2014
Workshop/ Utility event on MAR, demonstrating the COLMEX technology	SGAB, Cetaqua, Ecologic	Barcelona	Autumn 2014
Workshop on bioassays and regulatory barriers with small-scale demonstration	Vitens, KWR, BDS, Ecologic	Netherlands	Autumn 2014
2015			
Workshop/ Utility event about MAR	DUNEA, KWR, Ecologic	Netherlands	Spring 2015
Utility event on ceramic membranes with small scale pilot demonstration of ANCS at WAG Nordeifel	IWW, Aquatune	Germany	Spring 2015
Workshop on bioassays with small-scale demonstration	KWR, BDS, EAWAG, Ecologic	TBC	Summer 2015
Workshop/ Utility event on oxidation	KWR	Netherlands	Summer 2015
Final conference	KWR, Ecologic	TBC	Summer 2015

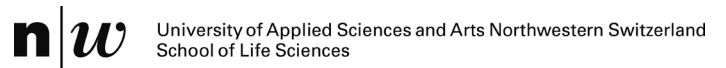


9 Past / Future Events

Title	Date	Place	Type of audience	Countries addressed
Wasser Berlin International	27/04/2013	Berlin, Germany	Industry	International
Micropol and Ecohazard 2013	16 – 20/06/2013	Zürich, Switzerland	Scientific community	International
XI Symposium on Micropollutants in Human Environment	25 – 27/09/2013	Wisla, Poland	Scientific community	Poland and International
World Congress of the International Ultraviolet Association and the International Ozone Association	24/09/2013	Las Vegas, USA	Scientific community	International
8th International Symposium on Managed Aquifer Recharge (ISMAR8)	15-19/10/2013	Beijing, China	Scientific community	International
7th Bio Detectors Conference: Dioxins, PCBs, POPs, endocrine disruptors, obesogens and emerging pollutants	7-8/11/2013	Istanbul, Turkey	Scientific community	International, EU
European water policy: challenges for Hydrogeologists	22-23/11/2013	Brussels, Belgium	Scientific community, policy makers	International, EU



10 DEMEAU Partners



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11 Featured Image



Ozonation at Water Works Zurich, plant Lengg

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