

## List of scientific activities organised by the NORMAN network in 2014

The Steering Committee has approved a budget of € 150 045 for 2014, based on the expected income from membership fees of the Founding and Ordinary members. These resources will be allocated for scientific and coordination activities (including website), and regular updating and maintenance of the databases.

NOTE: The Joint Programme of Activities of the NORMAN network is financed by the contributions of its members (membership fees and members' in-kind contributions), always with a view to maximising synergies between research teams in the field of emerging substances.

The list of approved scientific activities for 2014 is as follows:

### Databases:

- Further development and maintenance of the NORMAN EMPODAT database (EI [slobodnik@ei.sk](mailto:slobodnik@ei.sk)), including:
  - Maintenance, upgrading and feeding of new data into the database.
  - Upgrading of the bioassays data collection module based on the suggestions of WG on Prioritisation.
  - Implementing a link between ChemProp and EMPODAT for automated chemical and (eco)toxicological profiling (QSAR predictions) of existing and newly proposed NORMAN emerging substances (cf. also text below).
  - Re-programming of Substance Fact Sheets based on the suggestions of WG on Prioritisation; development of automated tool for import of ecotoxicological data for derivation of the lowest PNEC and physico-chemical properties of new NORMAN substances. (See also text below.)
  - Updating of the database for new substances approved by WG on Prioritisation. (See also text below.)
- Further development and maintenance of NORMAN MassBank to support storage of mass spectral information and identification of unknowns (as part of EDA Working Group) (UFZ [werner.brack@ufz.de](mailto:werner.brack@ufz.de)), including:
  - Workshop on MassBank and RMassBank to be organised as a satellite meeting of the evaluation workshop of Collaborative Trial on Non-Target Screening (EI / Eawag / UFZ).
  - Development and implementation of a workflow to process GC-MS data for MassBank upload (UFZ).
  - Further uploading of mass spectra to MassBank (UFZ, Eawag).
  - Integration of NORMAN DCT file upload in the RMassBank workflow (UFZ, IPB, Eawag)
  - Development of a new MassBank platform for environmental data (UFZ, consultation EI, IPB, Eawag)
  - Definition of minimum requirements for the storage of raw mass spectrometry data – digital data banking (UFZ, Eawag, HighChem, EI).
  - Establishment of a mass data storage platform for the large-size full-scan chromatography-mass spectrometry data allowing for their future processing - digital data banking (UFZ).

### Scientific activities:

SWB	NORMAN Bulletin on Emerging Substances (5 <sup>th</sup> issue) and collaboration with the journal "Environmental Sciences Europe" (ESEU). Due to lack of time and resources it was not possible to publish issue N° 5 of the NORMAN Bulletin in 2013. This task is therefore postponed to 2014 with the aim of publishing one issue of the NORMAN Bulletin, plus submission of one manuscript to ESEU on one of the two possible topics: 1) the results of the NORMAN ILS on passive sampling and requirements for future implementation in regulatory frameworks; 2) the current challenges related to the application of bioassays in water quality monitoring (coordination by INERIS <a href="mailto:valeria.dulio@ineris.fr">valeria.dulio@ineris.fr</a> , with notes contributed by various NORMAN members).
WG-1	Working group N°1: Prioritisation of emerging substances (on-going activity coordinated by INERIS <a href="mailto:valeria.dulio@ineris.fr">valeria.dulio@ineris.fr</a> ). The work in 2014 will focus on: Task 1: Complete the revision, testing and validation of the new version of the bioassay collection template (BCT) in EMPODAT (within the WG-1 Ecotox sub-group). The new version of the BTC will have the following features: 1) will include metadata compatible with the new CRED system in order to allow a simplified assessment of reliability and relevance of the tests 2) will provide "translation tables" for the automatic extraction of data from databases (e.g. ACQUIRE, Ecotox and Etox) and 3)

	<p>will be designed to allow for the direct feeding of the “Substance Fact Sheets” (SFS).</p> <p>Task 2: Develop a revised version of the “Substance Fact Sheet” (SFS). In order to allow full traceability of the prioritisation process, the new SFS will have the following features: 1) they will allow multiple entries for relevant parameters (e.g. <math>K_{ow}</math>, BCF, Solubility, etc.); 2) will include a field for the “final value”, displaying the references of the experimental or predicted values applied for the derivation of the respective prioritisation indicators.</p> <p>Task 3: Develop a workflow describing how to import the ecotox values into the Substance Fact Sheet (table structure to collect existing PNECs), describe automatic rules for deriving the PNECacute and PNECchronic based on the “BCT” data, as well as how to consider additional LoE for “non-standard tests” and existing “EQS” into a final PNEC.</p> <p>Task 4: Derive <i>Lowest PNEC</i> values (from predicted and experimental data where tests are available) for “new substances” (about 50 substances); revise existing <i>Lowest PNEC</i> values (from new experimental data) for “existing substances” (about 10 substances) on the NORMAN List; collect experimental data on degradation times, BCF, log <math>K_{ow}</math> from on-line databases.</p> <p>Task 5: Implement a link between ChemProp and EMPODAT for automated chemical and (eco)toxicological profiling (QSAR predictions) of existing and newly proposed NORMAN emerging substances (see <i>ChemProp</i> below) (UFZ).</p> <p>Task 6: Improve and integrate an exposure index based on use / consumption data from REACH in the prioritisation methodology (KEMI)</p> <p>Task 7: Coordinate the work aimed at further refinement of the current prioritisation methodology, i.e. for the inclusion of top priority compounds from non-target screening in the list of candidate emerging substances (sub-group on non-target screening); for the integration of a use data / exposure index; for improvement of the risk indicators to better take into account the emerging contaminants that may be relevant for human health depending on the use of the water resources; mixtures drivers.</p> <p>Task 8: Organisation of a NORMAN-SOLUTIONS<sup>1</sup> workshop on “Assessment of the state of the art of prioritisation methodologies, needs of the stakeholders and recommendations for the development of an advanced methodology” (INERIS).</p> <p>Task 9: Organisation of a NORMAN-SOLUTIONS workshop on “Non-target screening” (EI / Eawag) (see below <i>AW-1</i>).</p>
WG-2	<p>Working group N°2: The value of bioassays and biomarkers in water quality monitoring programmes (on-going activity coordinated by RWTH – Aachen University <a href="mailto:Henner.Hollert@bio5.rwth-aachen.de">Henner.Hollert@bio5.rwth-aachen.de</a>). The main activity of this WG for 2014 will be:</p> <ul style="list-style-type: none"> <li>▪ Proof-of-concept application of a biotest battery on samples obtained with large-volume active sampling – follow-up of the biotest battery validation study carried out in 2013 (Leader RWTH – University of Aachen) (see below <i>Proof of Concept bioassays</i>).</li> <li>▪ Workshop on the “results of the NORMAN interlaboratory study on a battery of <i>in vitro</i> bioassays” (Leader RWTH – University of Aachen) (see below <i>AW-2</i>)</li> </ul>
WG-3	<p>Working group N°3: Effect-directed analysis for hazardous pollutant identification (on-going activity coordinated by UFZ - <a href="mailto:werner.brack@ufz.de">werner.brack@ufz.de</a> ). The main activity of this WG for 2013 will be:</p> <ul style="list-style-type: none"> <li>▪ Development of an EDA community-wide agreed guidance paper on EDA for the identification of hazard-based emerging pollutants in the aquatic environment. A workshop to be held around SETAC Europe 2014 in Basel (involving the whole EDA community in Europe and beyond) will convene the experts who will contribute to the guidance development. Topics will be: EDA as a tiered approach; criteria for the selection of bioassays; fractionation and analytical procedures; quality control and confirmation approaches. The NORMAN WG on EDA together with EDA-EMERGE will play a leading role but will not exclude other potential contributors (Leader: UFZ as in-kind contribution).</li> <li>▪ Organisation of two-day workshop on Integrated Exposure and Effects Assessment, in collaboration with US EPA and NIES-Japan and under the umbrella of the NORMAN network (see below <i>AW-3</i>) (Leader: IVM).</li> </ul>
WG-4	<p>Working Group N°4: Engineered nanoparticles (on-going activity coordinated by EAWAG – Ralf Kaegi <a href="mailto:Ralf.Kaegi@eawag.ch">Ralf.Kaegi@eawag.ch</a> ). The main activity of this WG for 2014 will be the organisation of an</p>

<sup>1</sup> SOLUTIONS FP7 project (N° 603437) – « Solutions for present and future emerging pollutants in land and water resources management”

	interlaboratory study on method comparison for determination of size-distribution of gold nanoparticles in known and well characterised samples (Leader Eawag) (see below <i>ILS-1</i> ).
WG-5	<p>Working Group N°5: Wastewater reuse and contaminants of emerging concern (on-going activity coordinated by NIREAS, University of Cyprus - Despo Kassinos <a href="mailto:dfatta@ucy.ac.cy">dfatta@ucy.ac.cy</a>). Further to the launch of this working group in 2013 (as a follow-up to the DARE COST Action TD0803) and the approval of the mandate and the roadmap of activities for 2014, it was decided that the aim of this WG will be to deal with open questions related to wastewater reuse applications and occurrence of contaminants of emerging concern, in order to bring the attention of policy makers to this field of research, with a focus on antibiotic resistance bacteria and genes as contaminants of emerging concern.</p> <p>The main activity of this WG for 2014 will be the organisation of a screening campaign of selected antibiotic resistance determinants and mobile genetic elements (AR/MGE) from WWTPs in Europe (see below <i>AR/MGE Wastewater reuse</i>) (Leader NIREAS, University of Cyprus)</p>
WG-6	<p>Working Group N°6: Emerging contaminants in the indoor environment (<b>new activity</b> coordinated by IVL – Eva Brostrom-Lunden <a href="mailto:Eva.BL@ivl.se">Eva.BL@ivl.se</a>). Articles and consumer products used indoors may contain a variety of both well-known chemicals and emerging substances. Indoor air and dust is an important pathway of chemical exposure for humans but also a source for exposure to the outdoor environment. Links with EU Marie Curie ITN projects, INFLAME and A-TEAM. The main activity of WG-6 in 2014 will be the organisation of a kick-off meeting to define the mandate / strategy and the roadmap of activities of the Working Group as regards 1) in particular, emerging chemicals which should be analysed in indoor air and dust; 2) actions to improve harmonisation of measurement methods. The WG will also consider the feasibility of an ILS for non-target screening in indoor dust which would then take place in 2015. (Leader IVL)</p>
ChemProp	<p>Implementation of a link between the ChemProp software and models in EMPODAT for automated chemical and (eco)toxicological profiling of existing and newly proposed NORMAN emerging substances.</p> <p>Prioritisation of emerging substances is mainly hampered by missing risk assessment data (e.g. exposure and effect modelling and QSAR evaluations) and environmental toxicity thresholds (PNECs, EQS). The NORMAN list of emerging substances is growing each year. Hundreds of new candidate substances are identified by non-target screening techniques as of relevance in the use databases (e.g. SPIN; ca. 26000 substances). The implementation of the ChemProp module in EMPODAT will allow systematic preliminary screening / evaluation of the existing and newly identified emerging substances and their prioritisation for further actions. (Leader UFZ).</p>
Proof of Concept bioassays	<p>As a follow-up to the interlaboratory study for validation of a battery of <i>in vitro</i> bioassays for testing of chemicals in concentrated surface water samples (launched in 2013 and still on-going) ca. 30 samples (extracts obtained via large-volume active sampling) from the Joint Danube Survey 3 will be analysed with the validated battery of biotests. Based on the results of this action and together with results from the associated EU-funded project SOLUTIONS, a joint NORMAN-SOLUTION validated methodology for integrated effect/chemical screening based on large-volume active sampling will be presented to European regulators (publication). Publication of the results in an international peer/reviewed journal (Leader RWTH – University of Aachen <a href="mailto:Henner.Hollert@bio5.rwth-aachen.de">Henner.Hollert@bio5.rwth-aachen.de</a>)</p>
AR/MGE Wastewater reuse	<p>Organisation of a screening campaign of selected antibiotic resistance determinants and mobile genetic elements (AR/MGE) from WWTPs in Europe in order to systematically gather and evaluate information on the capacity of the currently applied wastewater treatment systems to overcome antibiotic resistance.</p> <p>A report (publication) with the conclusions on patterns of resistance diversity and abundance in wastewater in different European regions will be produced as the first outcome of this activity in 2014. (Leader NIREAS, University of Cyprus <a href="mailto:dfatta@ucy.ac.cy">dfatta@ucy.ac.cy</a>).</p>
Sampling guidance	<p>Drafting of a NORMAN best-practice document for sampling (and analysis) of contaminants of emerging concern. Further to the recommendations of the NORMAN workshop "Sampling and analysis of emerging contaminants in the aquatic environment: current and future challenges" (Oslo, 1 – 2 March 2012) publication of a guidance document on best practices for sampling (and analysis) linking with the respective documents proposed for non-target analysis and EDA (Leader NIVA – <a href="mailto:kevin.thomas@niva.no">kevin.thomas@niva.no</a>).</p>
AW-1	Workshop N°1: "Results of the NORMAN Collaborative Trial on non-target screening and further

	<p>actions" (<a href="mailto:slobodnik@ei.sk">slobodnik@ei.sk</a>)</p> <p>As a follow-up to the non-target screening collaborative trial launched in 2013 (organised by Environmental Institute (EI), Slovak Republic, in close cooperation with UFZ, LfU, Germany, Eawag, Switzerland and UMEA University, Sweden) an evaluation workshop will be organised on 15-16 September 2014 at Eawag (Zurich) to enable in-depth discussions of the results with the participating laboratories and drafting of recommendations for further improvement actions. The first day of the workshop (15 September) open exclusively to the participants in the collaborative trial, will be followed by a joint NORMAN-SOLUTIONS public event on non-target screening (16 September) and NORMAN MassBank (17 September).</p> <p>A report on the results and evaluation of the Collaborative Trial and a proposal for a harmonisation workflow for collection of mass spectral information from non-target screening will be produced as a result of this task. The conclusions of the evaluation report and the outcomes of the joint NORMAN-SOLUTIONS workshop will be the basis for the preparation of further NORMAN action on harmonisation of methods for non-target screening techniques (Leader Eawag / EI / UFZ).</p>
AW-2	<p>Workshop N° 2: "Results of the NORMAN Interlaboratory study on a battery of <i>in vitro</i> bioassays for testing of concentrated surface water samples and EDA fractions".</p> <p>The aim of the workshop is to discuss the lessons learned from the interlaboratory study launched in 2013 and reach consensus on the definition of a harmonised biotests battery to be proposed for implementation in European water regulation. The conclusions of the discussion will be reported in a joint manuscript (Leader RWTH – University of Aachen <a href="mailto:Henner.Hollert@bio5.rwth-aachen.de">Henner.Hollert@bio5.rwth-aachen.de</a>).</p>
AW-3	<p>Workshop N° 3: "Integrated Exposure and Effects Assessment"</p> <p>This workshop will be the third edition of a series of workshops on IEEA which were organised as an initiative of the US EPA and the National Institute for Environmental Studies (NIES), in late September 2012 in Japan and November 2013 in Nashville, USA.</p> <p>One of the main objectives of this workshop will be to discuss and bring to the attention of the regulators the progress made in the scientific community regarding the development and application of approaches for integrated exposure and effects assessment (including effect-based monitoring, -omics techniques for effect assessment, high throughput EDA, etc.). The results of this workshop will be integrated in the EDA Guidance Document (Leader IVM <a href="mailto:marja.lamoree@ivm.vu.nl">marja.lamoree@ivm.vu.nl</a> )</p>
ILS-1	<p>Interlaboratory study on method comparison for determination of size-distribution of gold nanoparticles in known and well characterised samples.</p> <p>This interlaboratory test will aim to answer the following questions: i) total concentration of Au in each sample, ii) size distribution of Au-NP in samples containing a single particle size or a mixture of up to three different sizes, and iii) based on the data obtained, the laboratories should decide whether the mixture is classified as a nanomaterial or not, according to EC recommendation.</p> <p>Today, information on the analysed ENMs is only obtainable by applying a set of different analytical techniques. Furthermore, certified reference materials are lacking and sample preparation procedures are not unified. Thus, quality assurance of measurement results is difficult to guarantee.</p> <p>The results of this action will serve as a basis for a workshop planned for 2015 addressing analytical challenges in nanomaterial analysis (supported by the COST Action 1205 (ENTER)). (Leader Eawag <a href="mailto:Ralf.Kaegi@eawag.ch">Ralf.Kaegi@eawag.ch</a> ).</p>
ILS-2	<p>Organisation of a proficiency test on alkylphenols (already started) and perfluorinated compounds in drinking water to see how reliable the analysis of these compounds is. The study will foster the harmonisation of approaches and the validation and comparability of data and also serves as a proof of competence for the participating labs (Leader IWW as full in-kind contribution David Schwesig <a href="mailto:d.schwesig@iww-online.de">d.schwesig@iww-online.de</a> ).</p>
PS-1	<p>Organisation of a meeting of all experts involved in NORMAN activities in the field of passive sampling to discuss the results of the activities performed in previous years, to finalise the reports and position papers and to define the strategy and a roadmap of the activities proposed for 2015 and beyond. The meeting will be hosted by IRSTEA in Lyon in Autumn 2014 (Leader RECETOX <a href="mailto:vrana@recetox.muni.cz">vrana@recetox.muni.cz</a> and IRSTEA <a href="mailto:cecile.miege@irstea.fr">cecile.miege@irstea.fr</a> , as in kind contribution )</p>

**The proposed budget will be revised by the Steering Committee in April 2014. All approved scientific activities will be implemented, independently of the revision of the budget.**