February 2015

NORMAN Joint Programme of Activities (JPA)

List of scientific activities organised by the NORMAN network in 2015

The *NORMAN Joint Programme of Activities* (JPA) is defined every year by the Steering Committee, after consultation with the membership (General Assembly meeting and e-mail survey).

The final JPA and the associated budget are approved by the Steering Committee, taking into account the following criteria:

- interest of the members (results of the survey);
- usefulness of the research topic for implementation in European environmental policies;
- balance between different sectors / fields of interest;
- relative value of the proposed in-kind contribution *vs* amount of resources required.

The Steering Committee has approved a budget of € 159 745 for 2015, 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 TNORMAN network JPA 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 2015 is as follows:

Databases:

- Further development and maintenance of the NORMAN EMPODAT database (EI slobodnik@ei.sk), including:
  - Maintenance, upgrading and feeding of new data into the database;
  - Implementation of the Bioassays Monitoring data collection module;
  - Development of the Passive Sampling data collection module;
  - Development of the Indoor Environment data collection module;
  - Improvement of the link between ChemProp and EMPODAT for automated collection of physico-chemical properties and (eco)toxicological (incl. QSAR predictions) data on the reviewed list of NORMAN emerging substances;
  - Implementation in the database of the workflows developed within WG-1 (see below) for: 1) import of (eco)toxicological data and other parameters into the Substance Factsheets; 2) derivation of the Lowest PNEC for NORMAN emerging substances;
  - Integration of the reviewed list of NORMAN emerging substances approved by WG-1 in the database.

- Further development and maintenance of NORMAN MassBank to support storage of mass spectral information for identification of unknowns (as part of EDA Working Group). The work in 2015 (UFZ tobias.schulze@ufz.de and Eawag Emma.Schymanski@eawag.ch) will focus on:
  - Further uploading of environmental spectra to MassBank;
  - Continuous upgrading of the MassBank server platform;
  - Continuous upgrading of RMassBank including a graphical user interface for more user friendly usage;
  - Improvement of the usability of MassBank in vendors' software programs (e.g. via NIST libraries).

Scientific activities:

SWB NORMAN Bulletin	NORMAN Bulletin on Emerging Substances (6th issue) and collaboration with the journal "Environmental Sciences Europe" (ESEU) (coordination as in-kind contribution by INERIS valeria.dulio@ineris.fr and fabrizio.botta@ineris.fr, with science notes contributed by various NORMAN members.
WG-1 Prioritisation of emerging	Working Group N°1: Prioritisation of emerging substances (on-going activity coordinated by INERIS. INERIS valeria.dulio@ineris.fr in collaboration with EI slobodnik@ei.sk). The work of WG-1 in 2015 will address the development and upgrading of data and tools for

substances	prioritisation of emerging substances with a focus on the following tasks: Task 1: Improvement of "Substance Factsheets" (SFS). Task 2: EMPODAT Ecotox module: Implementation of data queries for the extraction of data from online databases. Task 3: Implementation of the following tools in EMPODAT: a) workflow to allow a simplified assessment of reliability and relevance of the tests on the basis of the new CRED system (Criteria for Reporting and Evaluating ecotoxicity Data http://www.oekotoxzentrum.ch/projekte/klimisch/index_EN); b) workflow to import the ecotoxicity values and other parameters into the Substance Factsheets; c) workflow for automated derivation of the $PNEC_{acute}$ and $PNEC_{chronic}$, to be then assessed by WG experts, as a basis for derivation of the Lowest PNECs. Task 4: For the newly approved list of NORMAN emerging substances (2014), a new collection of supporting data will be launched in 2015 for categorisation / prioritisation of these substances. Task 5: Improvement and integration of an exposure index in the NORMAN prioritisation protocol. Task 6: Validation and implementation of the proposed protocol for integration of results from non-target screening studies in the current NORMAN prioritisation methodology (Cross-Working Activity on Non-target screening (see C-WG-A NTS below). Task 7: Contribution to the organisation of the workshop on Biocides (workshop scientific programme, oral presentations, etc.) (see AW-3 below) Task 8: Liaison with the new Sub-Group on Prioritisation of contaminants of emerging concern in groundwater (see Sub-Group Prioritisation CECs in GW below).
Sub-Group Prioritisation CECs in Groundwater	New Working Group (sub-group of WG-1) on Prioritisation of CECs in Groundwater (new activity coordinated by BRGM – Benjamin Lopez b.lopez@brgm.fr) The final aim of this WG is to: 1) set up a European platform of experts working on CECs in GW to discuss – and reach consensus at a wider level on – specific aspects / open questions relevant to prioritising chemical contaminants in groundwater; 2) provide recommendations / input to the European Working Group C "Groundwater" and to the on-going initiative at the EU level to establish a watch list for pollutants of groundwater, including emerging pollutants; 3) provide a specific GW prioritisation methodology, using as a starting point the prioritisation framework developed by NORMAN WG-1 for surface water; 4) improve sharing of monitoring data for GW across the EU; and a higher level of harmonisation concerning data reporting formats, data quality criteria, etc. Expected outcomes for 2015: Launch of the Working Group and definition of its position on prioritisation of CECs in GW.
WG-2 Bioassays	Working Group N°2: The value of bioassays and biomarkers in water quality monitoring programmes (on-going activity coordinated by RWTH – Aachen University Henner.Hollert@bio5.rwth-aachen.de). The main activity in 2015 will be the contribution of WG-2 experts to the "Support to Science Policy Interface (SPI) action on Effect-based and chemical analytical monitoring approaches for steroidal oestrogens" in collaboration with the Swiss Centre for Applied Ecotoxicology (CH), Eawag-EPFL (robert.kase@oekotoxzentrum.ch) An international programme has been proposed as an SPI activity for 2015-2016 to demonstrate the application potential of effect-based tools, related to the monitoring of Watch List substances. The results of this demonstration programme should facilitate the use of these methods to achieve national protection goals in a cost-efficient way. Many experts participating in NORMAN WG-2 are involved in this SPI activity which justifies the contribution of the NORMAN Network to this important initiative. Expected outcomes for 2015-2016 will be: a) harmonisation of methods for sample collection, sample extraction and biotest evaluation (together with the ISO experts); b) recommendations for screening and risk assessment for steroidal oestrogens; c) feasibility study involving both chemical anaylsis and effect-based tools; d) proof of concept for an integrated monitoring of the Watch List substances.
WG-3 Effect-directed analysis	Working Group N°3: Effect-directed analysis for hazardous pollutant identification (on-going activity coordinated by UFZ werner.brack@ufz.de and IVM marja.lamoree@ivm.vu.nl). The work of the EDA WG in 2015 will focus on: ▪ Finalisation of the EDA guidance paper (as a follow-up activity from 2014 in collaboration with EDA-EMERGE). Expected outcomes: EDA community-wide agreed guidance paper on EDA for

	the identification of hazard-based emerging pollutants in aquatic environments. Topics: EDA as a tiered approach; criteria for the selection of bioassays; fractionation and analytical procedures; quality control and confirmation approaches (Leader: UFZ as in-kind contribution). ▪ Organisation of a two-day workshop on Integrated Exposure and Effects Assessment, in collaboration with US EPA and NIES-Japan under the umbrella of the NORMAN network. This workshop was already approved under the Joint Programme of Activities for 2014 (see *AW-3* in NORMAN JPA 2014) (Leader: IVM marja.lamoree@ivm.vu.nl).
WG-4 Engineered nanoparticles	Working Group N°4: Engineered nanoparticles (on-going activity coordinated by EAWAG – Ralf Kaegi Ralf.Kaegi@eawag.ch). Follow-up to the ILS on "Method comparison for determination of size-distribution of gold nanoparticles in known and well characterised samples" organised in 2014: ▪ Workshop (spring 2015) to discuss the results from the ILS study (funded by COST ES 1205); ▪ Report / publication on the results of the ILS.
WG-5 AR/MGE Wastewater reuse	Working Group N°5: Wastewater reuse and contaminants of emerging concern (on-going activity coordinated by NIREAS, University of Cyprus - Despo Kassinos dfatta@ucy.ac.cy). A screening campaign on the presence of genetic elements encoding antibiotic resistance in the effluent of European UWWTPs was organised by WG-5 in 2014. A report (publication) with the conclusions on patterns of resistance diversity and abundance in wastewater in different European regions is part of the first outcomes of this activity in 2014. The following additional actions will be carried out in 2015 (Leader NIREAS, University of Cyprus): a) Selection of 5 genes to serve as top indicators for further assessment (b and c below); b) Assessment of the potential of antibiotic-resistant bacteria and genes (ARG) spread from treated wastewater to the receiving environment; c) Assessment of the possible uptake of ARG by plants irrigated with treated wastewater.
WG-6	Working Group N°6: Emerging substances in the indoor environment (on-going activity coordinated by IVL Eva Brorström-Lundén Eva.BL@ivl.se in collaboration with IVM pim.leonards@ivm.vu.nl and University of Antwerp adrian.covaci@uantwerpen.be). The activities of WG-6 in 2015 will focus on: ▪ Organisation of a workshop on "CECs in indoor environment" (Leader NILU) (see below AW-4); ▪ Development of a protocol for harmonisation of practices for dust sampling and characterisation (Leader IVL, IVM); ▪ NORMAN EMPODAT Database: work on database requirements (metadata needed for indoor environment monitoring data) with a view to creating a new module in the EMPODAT database for inclusion of indoor environment datasets produced by recent research projects (Leader IVL, IVM); ▪ Non-target screening collaborative trial of organic substances in an indoor environmental dust sample (see below ILS-1): invitations, logistics, and protocol will be organised by NILU in late autumn 2015 in combination with the INTERFLAB project; data evaluation and reporting will take place in 2016 (Leader NILU).
Non-target screening (Cross-Working Group) Activity	New Cross-Working Group Activity on Non-target screening (Leader: Eawag juliane.hollender@eawag.ch in collaboration with NIVA kevin.thomas@niva.no, EI slobodnik@ei.sk and Umea University peter.haglund@chem.umu.se). The new Activity Group will be in charge of the following tasks in 2015: 1) Implementation of the NORMAN network Early Warning System (NormaNEWS) among NORMAN laboratories active in non-target analysis. Concept: when one lab identifies a new contaminant, MS and other I.D. criteria are sent to other members of the group. The work to be carried out in 2015 will aim at: identifying the participating labs, defining the criteria for identification of compounds, agreement on protocols for exchange of "confidential" information, rules for common publications, etc. (Leader NIVA). 2) Exchange platform for targets, suspects and non-targets. Suspect screening is a very fast and effective way to identify substances not available as targets. Many groups use different lists of suspects and expressed the need to exchange these lists. However, the "screen smart" strategy is more effective than "screen big", such that just combing all lists will reduce the effectiveness of suspect screening. The work to be carried out in 2015 will aim at: a) formulating recommendations of potential platforms for exchange of suspects for screening samples and b) launching the collection of target, suspect and non-target lists and metadata from interested

	parties (Leader Eawag). 3) Development of a new platform providing a repository for raw chromatograms (and sample associated metadata in a standardised format), data processing and profiling functions, as a tool to support prioritisation of compounds via non-target screening (i.e. via exploitation of results from non-target screening studies). The work to be carried out in 2015 will aim at: a) the development of a mock-up platform of EnviLights for proof of concept using as a starting point an adapted version of the MetaboLights platform (an open-access repository for metabolomics studies) (in cooperation with EBI); b) definition of requirements for storage of raw data and metadata; c) harmonisation of DCT and ISA-Tab format including a 'NORMAN ontology'; d) identification of a funding source (e.g. H2020) to promote the development of a full EnviLights platform (Leader UFZ). 4) Organisation of a Collaborative Trial for non-target screening in dust from indoor environment. (Leader NILU in collaboration with EI) (see below ILS-1). 5) Refinement and integration of the non-target screening protocol in the NORMAN prioritisation scheme. This task (Leader EI) will be carried out in collaboration with the Prioritisation WG (see above WG-1, Task 6).
AW-1	Workshop N°1: "Trends and advances in the sampling and preservation of samples for identification of contaminants of emerging concern" (Leader NIVA, kevin.thomas@niva.no) Since the NORMAN Workshop ´Challenges in the sampling and analysis of emerging contaminants´ organised by NIVA in 2011, there has been significant scientific progress in sampling and analytical techniques. There is therefore a strong enough argument to re-visit the outcomes of the original workshop and pull together leading experts in Europe and beyond to address trends and advances in both the sampling and the analysis of contaminants of emerging concern, thereby revisiting the three themes: 1) How do we effectively sample for emerging compounds? 2) How do we identify the next generation of emerging compounds? 3) What are the next-generation emerging compounds? A session on application of passive sampling for routine monitoring of priority pollutants and more innovative applications of passive sampling techniques for non-target screening for emerging substances of interest in the natural and built environment will be integrated in this workshop (see also below Passive Sampling - Cross-Working Group Activity). The outcomes of this workshop will be of great interest to the implementation of large-scale screening studies, including EU-wide screening campaigns and the first EU Watch List (reliability and comparability of the results).
AW-2	Workshop N° 2: "1st Workshop on analysis of problematic compounds – How can we analyse very polar and hardly-ionisable compounds?" (Leader KWR, Patrick.Bauerlein@kwrwater.nl) The number of polar organic compounds ending up in the water cycle is constantly increasing. Current analytical techniques such as reversed phase HPLC and ionisation methods cannot sufficiently separate these compounds or ionise all compounds, respectively. HILIC columns are a promising chromatographic method to separate polar compounds. However, using these types of columns is not always straightforward and their way of working differs significantly from normal phase chromatography. This two-day workshop aims to share the information currently available on the analysis of polar compounds. Both HILIC chromatography and new ionisation techniques for non-polar compounds will be discussed. The workshop will take place in Rhodes as part of the 14th International Conference on Environmental Science and Technology (CEST2015: http://cest.gnest.org/node/1) back-to-back to the session "Emerging Pollutants" and the TREMEPOL dissemination event (http://tremepol.chem.uoa.gr/), where major scientific advances will be presented on the method development for the target and non-target screening of CECs. Research presented at this workshop can be submitted for publication to a special issue of the Journal of Hazardous Material after the normal peer review procedure.
AW-3	Workshop N° 3: "Environmental monitoring of biocides in Europe – compartment-specific strategies" (Leader Fraunhofer Institute heinz.ruedel@ime.fraunhofer.de in collaboration with German Environment Agency/Umweltbundesamt). Biocides are a group of compounds not currently covered appropriately by monitoring activities. In this context NORMAN has started an activity to gather data on environmental levels of biocides. The aim is to get an overview of the relevance of this group of chemicals and to identify those biocides which are of most concern. This workshop will be organised as a follow-up to the NORMAN-

	Umweltbundesamt biocide monitoring workshop organised in 2012. This activity is conducted as part of the Working Group on Prioritisation and also in the context of a broader action on biocides started by the German Environment Agency – Umweltbundesamt (project on biocides monitoring contracted to Fraunhofer IME).
AW-4	Workshop N° 4: "Emerging Pollutants in Indoor Environments" (Leader NILU, PernillaBohlin.Nizzetto@nilu.no) (as part of the activities of WG-6 on Emerging substances in indoor environment) The aim of this workshop is to pull together research expertise in Europe as well as relevant stakeholders and authorities to present research progress in: 1) relevant emerging contaminants in indoor environments; 2) indoor exposure to emerging contaminants and associated health effects; and 3) building engineering. The workshop will aim to identify the current state of the art and research needs for "old" and "emerging" pollutants in indoor environments. It will promote enhanced multi-disciplinary collaboration and increased awareness of research findings on indoor air pollution for authorities and stakeholders.
ILS-1	Collaborative Trial (CT) on Non-target screening of organic substances in an indoor environmental dust sample (as part of the activities of WG-6 on Emerging substances in indoor environment and the Cross-Working Group Activity "Non-target Screening"). (Leader NILU PernillaBohlin.Nizzetto@nilu.no in collaboration with EI slobodnik@ei.sk). This exercise is organised as a follow-up action to the NORMAN CT "Non-target screening of organic substances in water" (JPA 2013 and 2014). This CT will be performed in collaboration with InterFlab II (interlaboratory comparison study for target analysis of novel halogenated flame retardants organised by University of Toronto and Masaryk University). Dust samples will be prepared by the InterFlab project. Invitation of labs, logistics, and drafting of the CT protocol will be organised by NILU in 2015. Evaluation of the results will be done by NILU in 2016.
ILS-2	Organisation of a proficiency test on *sulphonylurea herbicides in drinking water* (already started) and *X-ray contrast agents in drinking water* (Autumn 2015) 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 d.schwesig@iww-online.de).
Passive sampling (Cross-Working Group Activity)	Organisation of a workshop session addressing applications of passive sampling for routine monitoring of priority pollutants and more innovative applications of passive sampling techniques for non-target screening for emerging substances of interest in the natural and built environment. (Leader NIVA Ian.Allan@niva.no in collaboration with IRSTEA cecile.miege@irstea.fr) The workshop session will be integrated into the "Trends and advances in the sampling and preservation of samples for identification of contaminants of emerging concern" workshop hosted by NIVA in Oslo (see above AW-1).

The proposed budget will be revised by the Steering Committee in May 2015. All approved scientific activities will be implemented, independently of the revision of the budget.