February 2018

# NORMAN Joint Programme of Activities (JPA)

# List of scientific activities organised by the NORMAN network in 2018

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:

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

The Steering Committee has approved a budget of € 189,845 for 2018, 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 the NORMAN website), and regular updating and maintenance of the databases.

NOTE: The NORMAN 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 2018 is as follows:

## Databases:

- **Integrated NORMAN Database System** (EI slobodnik@ei.sk, ipolyi@ei.sk).

Major activities in 2018 will be related to the transfer of all NORMAN database modules into a common new server and further development of the integrated NORMAN Database System (NDS). The NDS will bring together information from the NORMAN Chemical database (EMPODAT), the Ecotox database, Digital Sample Freezing Platform (DSFP) and NORMAN MassBank, using in the background a new extended list of NORMAN substances (SusDat, ca. 40,000 substances). Two new modules on Indoor environment and Passive sampling will be developed and integrated in the NDS based on the finalised Data Collection Templates from WG-6 and PS-CWG.
New NDS modules on Bioassays monitoring and Antibiotic resistance bacteria/genes will be programmed and tested based on the DCTs developed under EDA-EMERGE and ANSWER projects, respectively, and filled out with available data.
Development and testing of an optimum workflow for feeding SusDat with new data on parameters needed for prioritisation (e.g., physico-chemical properties, categories of use, chemical categories, classification & labelling (PBT, CMR, ED), Lowest PNECs, hazard properties, exposure indices, methods' LOQs, etc.) in close cooperation with WG-1 and NTS parameters (e.g. Retention Time Indices, exact masses of molecular ions, experimental and predicted fragments) in close cooperation with NTS-CWG.

The tasks to be addressed in 2018 are:
Continuous development and maintenance of the **NORMAN Database System** with a specific focus on:

- **NDS Chemical database - EMPODAT**
  - Maintenance, upgrading and feeding of new data into the database;
  - Upgrade of all DCTs for an extended list of NORMAN substances (SusDat);
  - Upgrade of DCT for wastewater based on comments received from ANSWER project;
  - Upgrade of new customised statistics for a semi-automated 'Prioritisation module' taking into account the prioritisation scheme newly developed by WG-1;
  - Upgrade of automated quality control tools for identification/ removal/ flagging of outliers in the collected datasets;
  - Development of a dynamic link to the Information Platform for Chemical Monitoring of DG ENV (IPCHEM);
  - Development of data mining tools to extract raw data from IPCHEM and establishment of a workflow for their processing into the 'NORMAN format'.

- **NDS Ecotox database**
  - Development of a NORMAN Lowest PNECs list and publishing it on the NORMAN website;
  - Establishing a baseline of the 'Lowest PNECs' (and associated key studies) for all substances already part of NORMAN and SOLUTIONS prioritisation exercises; flagging substances for which a consensus of WG-1 ecotoxicology experts has been reached;
  - Upload of new ecotoxicological datasets into the ECOTOX module;
  - QSAR predictions (P-PNECs) for >40,000 SusDat substances;
  - Further testing of the 'CRED' sub-module designed for automated allocation of reliability and relevance scores, which are then used to support the selection of the key studies for the derivation of the Lowest PNEC;
  - Further testing of the 'PNEC derivation' sub-module (automated calculation of the 'Lowest PNECs' from pre-selected key studies incl. SSD approach).

- **NORMAN MassBank (**UFZ tobias.schulze@ufz.de and LCSB - Luxembourg emma.schymanski@uni.lu**)**

***MassBank server platform***
In 2017, the whole code-base of the MassBank server platform was renewed (e.g. removal of deprecated Java Applet technology, better records deployment system, implementation of new viewers for mass spectra and chemical structures) and moved to the Java development environment Maven (co-operation between UFZ and IPB Halle). Based on this new platform, the new European MassBank server was launched in July 2017. The development work will be continued in 2018. This includes:

- Implementation of a new submission procedure for MassBank records
- Renewal of the MassBank database model
- Deployment of features for better interoperability with external databases.

A Github-based repository for records is planned. This will include automated compliance checking / validation of the records format before upload (instead of current validation-upon-upload procedure, which is insufficient for the MassBank team to assess record quality and ensure all criteria are met) and automated deployment of new and updated records into MassBank. The goals are: improved formal quality of records, easier deployment and sharing of records, improved management of the curation work (curators will be able to focus on the curation of the content rather than on curation of the format).

The design and the functionalities of the MassBank database will be improved. In future, the full records will be mapped into the database. This will foster the improvement of existing features and implementation of new features, such as better/new search options (e.g. full text search or URL-based search with InChIKey or SPLASH). A new Application Programming Interface will be also deployed in order to advance machine-based interoperability. The final goal is to improve user friendliness and interoperability with other software and databases.

***RMassBank***
RMassBank will continue to be maintained and developed as in previous years. This will be updated with bug fixes and code renewal in order to replace deprecated package and database links. An enhanced user interface is planned in the future, but there is no proposed timeline for its implementation and deployment at this stage.

***Curation***
Data quality is of the utmost importance to MassBank and current inability to include additional checks during record submission has become a bottleneck that must be addressed to ensure the capacity to actively “recruit” and assess new contributions to bring MassBank forward (see plans described above for a renewal of the code). Actions will be taken in 2018 to stimulate a discussion on curation via our GitHub repositories, to raise awareness of the curation issues. This will become a basis for developing new record validation and curation procedures, working in parallel with curation efforts required for the SusDat activity. Curation code will be based on the functions implemented in e.g. the RChemMass package (https://github.com/schymane/RChemMass) and discussion and curation scripts will be maintained in the “MassBank-Curation” repository (https://github.com/MassBank/MassBank-Curation).

***Contacts with other database providers and vendors and other issues***
Discussions with current contacts (database providers, vendors) will be pursued in 2018, but new connections will also be fostered. The improvement of the interoperability between MassBank Europe and other software/databases is an issue which will be fostered as soon as the new features are implemented in MassBank (e.g., new API and search functions, Github based records repository).

The Japanese MassBank will move to a Wiki-based platform in 2018 (planned launch in March 2018). This platform is not yet interoperable with the European MassBank platform and may result in a temporary "decoupling" of the resources during a transition phase. The record format will be the same and the new Github-based records repository will guarantee the exchange of records between MassBank Europe and MassBank Japan. It is not possible to anticipate at this stage the consequences of this decision by the MassBank Japan maintainers and any resulting future developments that may be necessary. However, because of the planned wide-ranging improvements to the MassBank server platform and the common activities with the metabolomics community in Europe and North America, it is expected that MassBank Europe will play a much more important role in future.

- **NORMAN Digital Sample Freezing Platform** (EI slobodnik@ei.sk )

A prototype of the NORMAN Digital Sample Freezing Platform (DSFP) was developed in 2017 and tested with datasets obtained within the Joint Danube Survey 3 (surface water samples) and the EU/UNDP EMBLAS project (http://emblasproject.org /; marine water, sediment, biota samples). The DSFP allows collection in a harmonised format, storage and high-throughput processing (retrospective screening) of LC-HR-ESI-MS data. The DSFP has attracted high interest in the mass spectrometric community within the NORMAN network and Europe-wide. A new approach for prioritising detected substances (including "unknowns") has been proposed using non-target screening data stored in the DSFP (see WG-1 Prioritisation).

The tasks to be addressed in 2018 are:

- Further improvement of functionalities of the DSFP (upload of raw mass chromatograms, visualisation of data, batch mode processing, use of MS-MS information etc.);
- Optimisation of parameters for automated generation of Data Collection Templates duly filled-in, using data from different HRMS instruments;
- Collection of mass spectral information on structurally characteristic fragments either obtained experimentally or predicted for all NORMAN SusDat (>40,000) substances;
- Extending functionalities of the DSFP for archiving and processing of GC-HR-MS (EI/APCI) data;
- Including more datasets from NORMAN partners to provide European coverage;
- Testing various options for archiving and processing of 'big data' - central storage server vs federated network of servers maintained at the national level (i.e. DSFP software provided to participants to be installed and operated on their server);
- Using archived data for testing of the newly proposed approach for semi-quantification of LC-HR-MS data;
- Using archived data for testing of the newly proposed categorisation / prioritisation framework applied to non-target screening data.

## Scientific activities:

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| 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, with science notes contributed by various NORMAN members).<br>The launch of the call for contributions and publication of the 6th issue of the NORMAN Bulletin could not take place in 2017 and is therefore postponed to 2018. |
| WG-1 Prioritisation of emerging substances | Working Group N°1: Prioritisation of emerging substances (Activity coordinated by INERIS valeria.dulio@ineris.fr in collaboration with EI slobodnik@ei.sk and UBA peter.vonderohe@uba.de).<br>The work of WG-1 in 2018 will focus on the following tasks (mainly follow-up of 2017):<br>**Task 1:** Support the prioritisation work of DG ENV / JRC at European level (WG Chemicals – CIS WFD) (permanent task).<br>**Task 2:** Continue the collection and compilation of physico-chemical properties, new ecotox data, classification & labelling, etc. to support categorisation and prioritisation of the substances in NORMAN SusDat.<br>**Task 3:** Final implementation on line and beta-testing of the ECOTOX module.<br>**Task 4:** Program new customised statistics for a semi-automated "prioritisation module" in EMPODAT allowing for categorisation and prioritisation of various lists of substances, ultimately feeding the NORMAN Substance Factsheets.<br>**Task 5:** Ecotoxicity testing for compounds prioritised in Category 3 (follow-up action started in 2017). |

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| | **Task 6:** Improvement of the NORMAN categorisation / prioritisation scheme and testing: in 2017 a discussion paper with a critical review of the NORMAN scheme was drafted by INERIS in collaboration with UBA, Eawag and EI. In 2018 it is planned to: a) pursue the work on the methodology review, including agreement on the technical aspects for the use of NTS data for prioritisation; b) finalise the consultation on the proposals described in the document and reach consensus on the final version of the new prioritisation methodology; c) perform a demonstration study with the data already available or provided by the experts. The discussion of the final document will be organised in close collaboration with the experts of the NTS CWG.<br>In addition to exchange by e-mail, it is planned to organise one meeting of the Prioritisation WG in 2018 (including the participation of the GW Sub-Group coordinated by BRGM b.lopez@brgm.fr). |
| WG-2 Bioassays | Working Group N°2: The value of bioassays and biomarkers in water quality monitoring programmes (Activity coordinated by RWTH – Aachen University Henner.Hollert@bio5.rwth-aachen.de).<br>The work of WG-2 Bioassays in 2018 will focus on the following tasks:<br>**Task 1:** Bioassays for the evaluation of neuroactive and neurotoxic emerging pollutants: organisation of a collaborative trial, position paper and workshop (Leader RWTH, Aachen Henner.Hollert@bio5.rwth-aachen.de) (see "ILS-Neurotox")<br>**Task 2:** Genotoxicity testing: organisation of a collaborative trial to compare the performance of different bioassays for genotoxicity and related mechanisms (Leader: KWR Watercycle Research Institute Milou.Dingemans@kwrwater.nl) (see "ILS-Genotox")<br>**Task 3:** Support the work of the Commission (EBM – CIS WFD Activity), in particular as concerns the proposal for a battery of bioassays for chemical water quality assessment under the WFD and the definition of quality / performance criteria for the benchmarking of bioassays. The aim of this task is to support the implementation of effect-based methods in the regulation as screening tools to reduce chemical analytical monitoring burden. |
| WG-3 Effect-directed analysis | Working Group N°3: Effect-directed analysis for hazardous pollutant identification (Activity coordinated by UFZ werner.brack@ufz.de and IVM marja.lamoree@ivm.vu.nl).<br>The work of the WG-3 EDA in 2018 will pursue the "Virtual EDA" collaborative exercise started in 2017. The aim of this study is to test the virtual EDA concept, where non-target screening data and effect-based measurements are integrated via the application of multivariate analysis, in order to find correlations between effects and typical contamination patterns.<br>50 urban WWTPs with different types of treatment have been selected all over Europe. Effluents will be collected using a simplified (50 L) LVSPE equipped by UFZ.<br>Chemical target- and non-target screening with LC-HRMS and bioanalytical screening with a battery of selected small-volume, high-throughput tests will be performed on each sample. The toxicological assessment will include several lethal and sub-lethal endpoints in fish embryo, daphnia and algae as well as a suite of *in vitro* assays involving endocrine disruption, adaptive stress response, mutagenicity, etc. The sampling campaign, started in 2017, and will be finalised in 2018. Results are planned to be published in 2019 and ready for upload in NORMAN databases.<br>Outcomes: 1) Input to the European discussion on WWTP upgrading; 2) Input to European discussion on effect-based monitoring tools; 3) Input to European discussion on priority pollutants and priority mixtures. The results will be used for joint scientific publication(s) involving all participants and more policy-oriented formats. (Leader: UFZ werner.brack@ufz.de). |
| WG-4 Engineered nanoparticles and microplastics | Working Group N°4: Nano- and micro-scale particulate contaminants (Activity coordinated by Eawag – Ralf.Kaegi@eawag.ch).<br>The work of WG-4 in 2018 will focus on the following tasks:<br>**Task 1**: As regards engineered nanomaterials, NORMAN WG-4 will organise an interlaboratory study to evaluate the performance of specifically-developed sample preparation protocols to extract engineered nanomaterials from complex matrices, with a view to the development of standardised sample preparation protocols. (Leader: UFZ stephan.wagner@ufz.de ) (see ILS-ENMs")<br>**Task 2**: As regards micro and nanoplastics, NORMAN WG-4 will investigate the possibility of developing a "NORMAN Plastic reference material". The NORMAN activities will be harmonised with the activities of other institutions such as BAM and JRC. (Leader: Eawag Ralf.Kaegi@eawag.ch |
| WG-5 Wastewater | Working Group N°5: Wastewater reuse and contaminants of emerging concern (Activity coordinated by NIREAS, University of Cyprus – Despo Kassinos dfatta@ucy.ac.cy in collaboration with Catholic |

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| reuse and contaminants of emerging concern | University of Porto – Celia Manaia cmanaia@porto.ucp.pt and University of Dresden thomas.berendonk@tu-dresden.de).<br>No specific activities of WG-5 will be organised under the NORMAN JPA in 2018.<br>The activities of the EU-funded MSCA ITN project ANSWER and the NEREUS Cost Action are closely connected with NORMAN WG-5. Through the ANSWER project, for example, new Data Collection Templates for the EMPODAT were developed in 2017, concerning antibiotic resistance batcteria and genes (ARBs, ARGs) and crops uptake. Fifteen ESRs (early stage researchers) will contribute with relevant information and data to the NORMAN EMPODAT database.<br>These collaborative activities will be pursued in 2018. |
| WG-6<br>Emerging contaminants in the indoor environment | Working Group N°6: Emerging contaminants in the indoor environment (Activity coordinated by NILU Pernilla.Bohlin.Nizzetto@nilu.no in collaboration with IVM pim.leonards@ivm.vu.nl and University of Antwerp adrian.covaci@uantwerpen.be).<br>The work of WG-6 Indoor Environment in 2018 will focus on the following actions:<br>- Further development of the indoor dust and air Data Collection Template (DCT) for EMPODAT, including data from passive sampling;<br>- Integration of the DCT indoor dust and air in EMPODAT;<br>- Collection and uploading of indoor data in EMPODAT;<br>- Suspect- non-target and target analysis of dust: in order to assess regional differences, 5-10 dust samples from different countries will be collected and analysed by the WG-members (this activity will start 2018).<br>- Participation of WG members in a collaborative trial to compare sampling protocols for indoor dust (see “ILS Dust Sampling protocols”);<br>- Work on the prioritisation process of CECs for the indoor environment based on the NORMAN prioritisation methodology developed in WG-1. This task will mainly be carried out in the Indoor Prioritisation Sub-group and then discussed with the whole group during the WG meetings (two meetings planned in 2018).<br>Two meetings are planned to take place in 2018: a skype-conference on 24 April 2018 and a WG meeting on 30 October 2018 (venue to be decided). |
| Non-target screening Cross-Working Group Activity (NTS CWA) | CWG-NTS: Cross-Working Group Activity on Non-target screening (Activity coordinated by Eawag juliane.hollender@eawag.ch in collaboration with NIVA kevin.thomas@niva.no, EI slobodnik@ei.sk, UFZ tobias.schulze@ufz.de and University of Athens Nikos Thomaidis ntho@chem.uoa.gr).<br>The following actions will be carried out as part of the CWG-NTS Activity in 2018:<br>- NORMAN Suspect Exchange (and the associated suspect list database “SusDat”): Database development and maintenance (LCSB, EI, UoA) (see “SusDat”);<br>- Second round of the NORMAN network Early Warning System initiative (NormaNEWS2) (NIVA, UoA) (see “NormaNEWS2”);<br>- NORMAN MassBank - Continuous development and upgrade (UFZ, LCSB) (see “Databases - NORMAN MassBank”);<br>- Digital Sample Freezing Platform (EI) (see “Databases – NORMAN DSFP”);<br>- Reference materials for NTS (Wageningen Environmental Research - Alterra) (see “NTS Research materials”);<br>- ILS for NTS deconvolution and library search algorithms (NIVA) (see “ILS-NTS data treatment”)<br>- Discussion group on NTS in biota using environmental specimen banks archives for the identification of CECs (SLU) (see AW-2 “NTS biota”);<br>- Workshop on passive sampling and NTS (NIVA) (see AW-3 “Passive sampling and NTS”)<br>- NTS workshop for regulators (NORMAN Steering Committee) (see AW-1 “NTS workshop for regulators”) |
| NTS CWA: NORMAN Suspect Exchange | SusDat: NORMAN Suspect Exchange (Leader: LCSB, Luxembourg emma.schymanski@uni.lu in collaboration with EI alygizakis@ei.sk and UoA raalizadeh@chem.uoa.gr) (Activity organised as part of the CWG Activity on NTS)<br>The NORMAN Suspect Exchange (and the associated suspect list “SusDat”) will become the cornerstone / data basis for all NORMAN databases and prioritisation efforts. Continuing the collaboration with the US EPA CompTox Chemistry Dashboard will ensure the progressive addition of high quality curated structures to the database and will enable benefits from other related activities at the US EPA surrounding non-target analysis and computational toxicity efforts. All this will be |

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| | essential to transform the Suspect Exchange and SusDat in a way that will support all the NORMAN efforts.<br>The work of SusDat will focus on the following tasks in 2018:<br>- Integration of DTXSIDs (CompTox DashBoard identifiers) into lists;<br>- Progressive registration of prioritised compounds in lists not present in the CompTox Dashboard<br>- Development of new strategies to deal with UVCBs;<br>- Update of SusDat (combined list of MS-ready forms from individual lists);<br>- Website maintenance and development;<br>- Addition of new lists when they become available;<br>- Further development of strategies to deal with tentative/unknown/related structures;<br>- Symposium at ACS Spring;<br>- Publication(s) on methods and software behind Suspect Exchange;<br>- Open software/packages/approaches for curation/merging once appropriate (see "NORMAN MassBank"). |
| NTS CWA: NormaNEWS and retrospective screening | NormaNEWS and retrospective screening (Leader: NIVA kevin.thomas@niva.no in collaboration with EI Nikiforos Alygizakis alygizakis@ei.sk and UoA Nikos Thomaidis ntho@chem.uoa.gr) (Activity organised as part of the CWG Activity on NTS)<br>The concept of NormaNEWS is that when one group identifies a new contaminant of emerging concern, identification criteria are sent to other members of the group who use retrospective analysis techniques to check their own samples. This way it is possible to rapidly establish the occurrence of newly identified compounds of emerging concern across Europe and beyond (thereby contributing to identification of future priority contaminants).<br>The first round of the collaborative NormaNEWS joint activity in 2016 successfully demonstrated the usefulness of the retrospective screening of high resolution mass spectrometric data in establishing the spatial and temporal occurrence of newly identified compounds of emerging concern. To build on the first study, a second NormaNEWS exercise will be performed in 2018.<br>As part of this exercise the work of 2018 will focus on the following tasks:<br>- Develop an updated and comprehensive NormaNEWS suspect list, that will include the substances listed in the EU Watch List (first list reported in the Commission Implementing Decision (EU) 2015/495 and further updates in 2018 and beyond) and those provided by members of the NORMAN Network;<br>- Run a second round of retrospective suspect screening with increased focus on matrices other than water;<br>- Host an expert group meeting to evaluate the feasibility of establishing NormaNEWS as an open resource. Date to be decided. |
| NTS Research materials | Development of research materials for NTS (Leader: Wageningen Environmental Research - Alterra wim.cofino@wur.nl in collaboration with Prof de Boer, Vrije Universiteit, Department of Environment and Health and other NORMAN partners).<br>The objective of this project is to assemble a set of reference materials (e.g. biological tissues, sediments, sewage sludges, soils or plant material, here called research materials) for method development and for Quality Assurance. The materials can be requested by laboratories when testing their methodology and can be used for interlaboratory comparisons, for instance for proficiency tests and method validation studies, bioassay testing, or as reference materials in QA programmes as part of large, (inter)national measurement campaigns. In consultation with the non-target screening community, needs and requirements for the materials, including the addition of compounds to assess retention times and MS performance, will be established. Materials will be identified and prepared that are relevant for many laboratories and that are stable for appropriate periods of time.<br>Laboratories will have the opportunity to request these research materials at reasonable costs at the Quasimeme/WEPAL Project Office (the costs charged will be a contribution towards shipment, data handling and updating). All submissions will be compiled and will be available for all laboratories that have analysed or will use the samples. When sufficient data are available, the database may contain a wealth of methodology information enabling comparative studies.<br>Initiatives will be taken to promote this activity and identify the needs of the users. Collaboration will be sought with the activity "NTS in biota" (AW-2). Contact with AMAP will be sought in an attempt to prepare a biological reference material for NTS research and inter-comparison studies. The possibility |

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| | of organising a session at an international conference in 2018 to discuss this initiative will be actively explored. |
| Passive sampling Cross-Working Group Activity (PS CWA) | Passive sampling Cross-Working Group Activity (Leader NIVA Ian.Allan@niva.no and IRSTEA cecile.miege@irstea.fr ).<br>The work of the Passive Sampling Cross-Working group activity in 2018 will focus on the following tasks:<br>**Task 1:** Organisation of a workshop bringing together passive sampling and non-target screening specialists to discuss state-of-the-art options for the combination of passive sampling and non-target and suspect screening procedures (see AW-X "Passive sampling and NTS").<br>**Task 2:** Finalisation of the module for passive sampling data in EMPODAT (see "EMPODAT") |
| AW-1 | Workshop N° 1: "NTS workshop for regulators" (Leader UBA, INERIS, NILU, NIVA, Eawag, EI/WRI, ALTERRA /Wageningen).<br>EU MS and regulatory authorities are getting ready to discuss the potential of non-target screening (NTS) approaches for regulation. On the other hand it is clear that these techniques and the way in which they could be applied is still a complex issue with many implications for current routine monitoring practices. NORMAN has already made significant progress for the harmonisation of analytical protocols, data treatment workflows, etc. Moreover, various collaborative initiatives for data exchange and data banking have been launched to improve the potential of these techniques for chemical monitoring and prioritisation. But to discuss the potential of NTS for the regulatory framework, it is necessary to start at an early stage to explain to the regulatory bodies what "NTS techniques" means and what we can learn from their application on environmental samples (suspect screening and retrospective analysis of samples in digital archives) and to exchange ideas about the implications and the potential changes needed in the regulatory framework for chemicals management and environmental monitoring.<br>A workshop will be organised on October 2018 in Brussels, where MS regulators and institutional bodies will be invited to discuss their views on the application of NTS approaches for regulatory monitoring. |
| AW-2 | Workshop N° 2: "NTS in biota" (Leader: SLU, Wiebe Dürig wiebke.durig@slu.se ) (Activity organised as part of the CWG Activity on NTS).<br>Discussion group on non-target screening in biota using environmental specimen banks archives for the identification of CECs. In this new discussion group, researchers from universities, food agencies and research institutes would discuss how the existing knowledge could be transferred to biota samples and which species/tissues should be selected for non-target screening in the future. A follow-up of these meetings could result in a collaborative trial in 2019 with a uniform sample extraction and clean-up method, to compare non-target workflow approaches and results among the participating groups. The objectives and outcomes of this new discussion group include:<br>- Agreement on senile species for non-target analysis in a collaborative trial (2018);<br>- Selection of a uniform sample preparation method with regard to non-target screening in biota (2018);<br>- Planning of a collaborative trail with biota samples extracted using the selected uniform sample preparation method to compare non-target workflows in biota samples (the trial should be carried out in 2019);<br>- Scientific publication on the results of the collaborative trail (planned 2020). |
| AW-3 | Workshop N° 3: "Passive sampling and NTS" (Leader: NIVA, NIVA Ian.Allan@niva.no and IRSTEA cecile.miege@irstea.fr) (Activity organised as part of the CWG Activity on Passive sampling in collaboration with the CWG Activity on NTS)<br>The aim for 2018 is to organise a workshop (date and place still to be fixed) to bring together selected passive sampling and non-target screening specialists to discuss the state of the art and to propose a larger study to be conducted in 2019-2020 within the remit of NORMAN. The aim of this meeting will be to share experiences within the two fields of research and build a common workplan for a study (an intercomparison of methodologies or a cooperative study, considering that dual expertise may not be available at all participating organisations) the following year.<br>Relevant parameters include the polymer type (oligomers), sampler configuration and size, matrices to be sampled, or analytical instrumentation used. |

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| | The deliverable for this project proposal will be a study plan to be finalised during 2018. Such a study could lead to harmonised protocols and procedures for sample handling and passive sampling in various matrices to ensure optimum samples for non-target screening. |
| AW-4 | Workshop N° 4: "Cooperation NORMAN - JDS4: Brainstorming workshop to prioritise and interlink proposals for NORMAN activities and Joint Danube Survey 4 (JDS4) in 2019" (Leader: ICPDR Igor Liska igor.liska@unvienna.org in collaboration with UBA Jan Koschorreck, jan.koschorreck@uba.de)<br>The key objective of JDS4, organised by the ICPDR, is to produce comparable and reliable information on selected water quality elements for the whole length of the Danube River including the major tributaries on a short-term basis and to provide an opportunity for harmonisation and training in WFD-related monitoring. The chemical monitoring planned for JDS4 includes a number of items (analysis of emerging substances, non-target screening, effect-based tools) which are addressed by NORMAN. JDS4 offers NORMAN experts an excellent 'playground' for testing different analytical and monitoring issues on a large transboundary river basin. A brainstorming workshop for 20-25 participants is proposed to be held in Vienna/Austria in April/May 2018 in order to discuss areas of common interest between NORMAN and JDS4.The final aim is to interlink NORMAN JPA 2019 proposals and JDS4 in order to achieve maximum synergy, in particular with a view to the application of the new analytical techniques in the current regulatory framework. |
| ILS-Neurotox | Collaborative Trial on Bioassays for the evaluation of neuroactive and neurotoxic emerging pollutants (Leader: RWTH, Aachen University Henner.Hollert@bio5.rwth-aachen.de) (Activity organised as part of WG-2 Bioassays)<br>Different classes of environmental contaminants and respective transformation products are recognised to be neuroactive and / or neurotoxic, including many pharmaceuticals, insecticides and heavy metals. Currently there is no regulatory framework for neurotoxicity assessment for aquatic systems. At the same time, neuroactive / neurotoxic aquatic contaminants are attracting increasing attention. There is therefore an urgent need to promote the use and application of bioassays for the assessment of the neuroactive and neurotoxic potential of chemicals and environmental samples. The main objectives of this study are:<br>- To develop an interlaboratory activity in 2018 to demonstrate the performance and usefulness of the bioassays on neurotoxicity;<br>- To write a joint manuscript on neurotoxicity as an emerging mode of action (MOA), relevant for water quality monitoring;<br>- To organise a workshop on aquatic neurotoxicity, to increase awareness of the topic and encourage collaboration between interested stakeholders. |
| ILS-Genotox | Collaborative Trial on Bioassays for genotoxicity testing (Leader: KWR Watercycle Research Institute, Milou.Dingemans@kwrwater.nl) (Activity organised as part of WG-2 Bioassays).<br>There are different *in vitro* bioassays available to test for genotoxic activity and related mechanisms. The aim of this study is to compare the performance of different bioassays for genotoxicity and related mechanisms. NORMAN members (and organisations outside the network) will be invited to participate. Water-relevant mixtures of micropollutants will be produced by KWR Watercycle Research Institute and sent to the participants. Different types of bioassays will be used to test (blindly) the same samples. The conclusions will be evaluated and disseminated to the NORMAN network. |
| ILS-NTS-data treatment | Collaborative Trial for Comprehensive examination of deconvolution and library search algorithms for non-target analysis (Leader: NIVA, Malcolm J. Reid Malcolm.Reid@niva.no) (Activity organised as part of the CWG-NTS)<br>The differences in data-processing tools available in each laboratory are a significant source of observed variability in non-target screening exercises. The aim of this project is to organise an ILS to compare the performances of different deconvolution and library search algorithms commonly used for the non-target analysis of complex environmental samples. A well-characterised extract will be sent to each participant in the trial along with the instrumental methods for the analysis and data acquisition. Additionally, a list of features (i.e. retention time and m/z value pairs) will be sent to the participants for identification. The participants will be asked to run the samples in data independent mode. The participants will use their own vendor or open-source data processing tools for identification of those features. The final reports and the raw data will be submitted to the coordinators of the activity. The final results will go through a quality control step where the reported IDs will be |

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| | compared to the actual identity of the features. A comprehensive guideline will be produced and disseminated within the network for confident non-target analysis using data-independent acquisition mode. A scientific paper will be produced. |
| ILS-ENMs | Collaborative Trial on Extraction of engineered nanomaterials from complex matrices (Leader: UFZ, Stephan Wagner stephan.wagner@ufz.de) (Activity organised as part of WG-4)<br>Although analytical methods to quantify ENPs in simple matrices (e.g. deionized water, or particle free solutions of low ionic strength) have been developed over the last decade, adequate sample preparation protocols, including extraction procedures, for complex matrices are still lagging behind. Therefore, ENP released from consumer products and transferred to different environmental compartments cannot yet be detected reliably. Via this ILS we will evaluate the performance of specifically-developed sample preparation protocols to extract ENPs from complex matrices. Several sample preparation protocols suitable for a range of matrices have already been developed by WG-4 organisations. The planned round-robin test will offer the possibility to assess the inter-laboratory repeatability of the available sample preparation protocols and thus contribute to the development of standardised sample preparation protocols. For the detection and quantification of the extracted nanoparticles from the respective matrices, conventional and single-particle ICP-MS will be used. In addition, the suitability of electron microscopy techniques will be evaluated, provided that enough participants express their interest in this method. |
| ILS-Dust sampling | Collaborative Trial for dust sampling protocols (Leader: IVM Pim Leonards, pim.leonards@ivm.vu.nl in collaboration with University of Antwerp – Adrian Covaci adrian.covaci@uantwerpen.be and NILU Pernilla.Bohlin.Nizzetto@nilu.no) (Activity organised as part of WG-6 “CECs in indoor environment”)<br>In the last decade, an increasing number of papers have reported the levels of SVOCs (semi-volatile organic compounds) in indoor dust and air. Different sampling protocols and equipment are used to collect indoor dust, but no standardised protocol is available. Different sampling protocols can result in different particle size fractions collected. There is a great need for an intercomparison study on dust sampling protocols to evaluate whether different sampling methods and sample treatments (e.g. sieving) can cause differences in SVOC levels.<br>The following activities are proposed for 2018:<br>- Set up an intercomparison study of dust sampling and treatment using different sampling protocols (for this study, a commercially available SRM dust material will be used);<br>- Determine the levels of specific SVOCs (e.g. PBDEs, PFRs, PAHs, Phthalates, PFAS) and other parameters (particle size distribution, TOC, water content) in these samples;<br>- Reporting of the results (planned in 2019).<br>A scientific paper will be produced. |
| ILS-IWW | Interlaboratory studies on sulfonyl urea herbicides, trifluoroacetic acid, x-ray and contrast media, PAH, PFC, Cypermethrin and Hexabromocyclododecanes (HBCDD) (Leader: IWW as full in-kind contribution, David Schwesig d.schwesig@iww-online.de).<br>There are increasing reports about the occurrence of these substances in the aqueous environment: in surface water, groundwater and for some of them even in drinking water. Reliable analytical methods are needed in order to better assess the current situation and to investigate the effectiveness of several measures (such as advanced wastewater treatment) to reduce emission of these substances into surface waters.<br>However, for these substance groups there are no European or internationally harmonised or standardised analytical methods available so far, and a thorough assessment of the suitability of different analytical methods used is still lacking.<br>Together with AQS BW, IWW Water Centre will organise interlaboratory studies on these compounds in drinking or surface water.<br>- The ILS on sulfonyl urea herbicides (amidosulfuron, metsulfuron-methyl, nicosulfuron, thifensulfuron-methyl, triasulfuron) will be carried out during the first quarter of 2018;<br>- The ILS on trifluoroacetic acid (TFA) will be carried out during the 2nd quarter 2018;<br>- The ILS on X-ray and contrast media (amidotrizoic acid, iodipamide, iohexol, iomeprol, iopamidol, iopromide, iothalamic acid, ioxaglic acid, ioxitalamic acid, gadolinium, gadolinium anomaly) are scheduled for the 2nd half of 2018;<br>- The ILS on PAH (benzo[a]pyrene, fluoranthene), PFC (PFOS, PFOA), Cypermethrin and HBCDD are scheduled throughout the complete year 2018. |

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| | For more technical details and the dispatch dates www.iswa.uni-stuttgart.de/ch/aqs/index.en.html<br>The studies will combine proficiency testing of laboratories and evaluation of the suitability of methods used (V3 level).<br>A comprehensive report on the outcome of the interlaboratory studies will be published on the NORMAN website, with conclusions on:<br>- The proficiency levels or European analytical laboratories;<br>- The suitability of analytical methods for analysis of these two compound classes in water samples.<br>The added value will be an increased knowledge about the suitability of analytical methods and the proficiency level of European laboratories to monitor these compound groups in the aqueous environment. |

**The proposed budget for this JPA may be revised by the Steering Committee in May 2018. All approved scientific activities will be implemented, independently of the revision of the budget.**