

Proposals for NORMAN Joint Programme of Activities 2024

Title	JPA for WG2 activities for bioassays
Type of activity	Workshop, Joint publication, and Research project
Leader / participants	University Frankfurt (Lead: Henner Hollert, Sarah Johann & Francisco Sylvester) with UBA (Jan Koschorreck) and Fraunhofer-IME (Sebastian Eilebrecht, Bernd Göckener)
Topic / activities	<p>Two-day Workshop of WG2 in summer 2025. In November 2024 a virtual WG2 Meeting was held and future directions of the WG2 have been discussed. There, it was agreed that a two-day workshop on the future direction and activities of WG2 should be held in summer of 2025. A broad range of topics will be discussed at the planned WS, including contributions of WG2 to the bioactivity database, the recent developments in the field of AI, links of bioassays in JPAs of WG3 EDA, innovative behavioural assays, eDNA-and eRNA-based methods, including transcriptomics, adverse outcome pathways, as well as the further implementation of effect-based methods in European chemical regulations.</p> <p>Joint Publications. Recently, an abstract for a presentation at the SETAC EUROPE 2025 in Vienna was submitted. In 2025, as a follow-up to the successful workshop of Working Group 2, “Innovative Approaches for Environmental Monitoring of Chemical Pollution and Biodiversity – Linking Biodiversity Loss and Chemical Pollution”, in December 2023, two joint manuscripts are in progress and will be submitted in 2025: A joint manuscript “Overview of large projects and research networks linking chemical pollution and biodiversity loss in Europe”, based on the keynotes at the workshop in 2023 is presenting 13 large European projects and research networks linking chemical pollution and biodiversity loss. This Manuscript is under preparation and will be submitted in February 2025. A second manuscript will be developed as a NORMAN position paper. A draft will be discussed at the two-day workshop of WG2 in Summer 2025 and further developed after the workshop. The overall objective of this manuscript is to (i) discuss the linkage between chemical pollution and biodiversity changes and the implication of the new role of chemical pollution within the conceptual framework of planetary boundaries, the EU strategies on biodiversity and chemicals for sustainable chemical markets, the EU one health concept, and, more specifically (ii) to bring together existing expertise and methods on chemical pollution and biodiversity, promote cooperation, combination of existing databases on both fields and joint studies.</p> <p>Research project on linking effect-based methods (EBMs) and effect-directed analysis (EDA) of temporal trends in suspended particulate matter as a joint activity of WG2 and PARC. Since 2005, suspended particulate matter (SPM) samples are systematically collected from major German rivers, including Rhine, Elbe and Danube for the German Environmental Specimen Bank (https://umweltprobenbank.de/en/, Zizka et al 2022, ESEU, https://doi.org/10.1186/s12302-022-00618-y and Fliedner et al. 2022, STOTEN, http://dx.doi.org/10.1016/j.scitotenv.2022.158430). The samples have been analysed for a range of inorganic and organic pollutants with target, cumulative and Non-Target Screening methods. In addition, DNA metabarcoding data from the SPM samples are available for fish and macrozoobenthos communities. Additionally, fish and in a joint JPA 2024 also SPM from the Environmental Specimen Bank were also analyzed using transcriptomics in early life stages of Danio rerio. The JPA 2024 and a PARC activity from ORU, UBA and SLU could identify severe temporal differences in the effect-patterns of the SPM.</p> <p>The aim of the applied JPA for 2025 is a joint investigation of suspended particulate matter from the environmental specimen bank using a broad battery of effect-based methods and to establish a strong cooperation between NORMAN WG2 and PARC in order to deepen the understanding of temporal trends of effects of SPM from the Environmental Specimen Bank. Selected effect-based methods of the NORMAN/Solutions biotest battery (Brack et al.2019, ESEU, https://doi.org/10.1186/s12302-019-0192-2, eg, PFAS, ER, p53, antiAR-CALUX, microEROD, FET, Ames) will be carried out on the extracted suspended matter samples. In order to identify the drivers of toxicity EBM, data will be compared to the already existing chemical exposure and EDA data of the SPM and the transcriptome data of the investigated fish from the environmental specimen bank using mass balance calculations and also AI-based methods.</p> <p>Added value / Link with other NORMAN activities and/or other projects</p> <p>This JPA would for the first time couple extensive profiling of time series from environmental specimen banks with a broad battery of EBM and would allow comparison with available eDNA-based biodiversity data, chemical expression data from SPM and transcriptome data from fish, thus making an important contribution to the temporal understanding of the link between chemical pollution and biodiversity loss and contributing to the establishment of effect-based early warning systems. It would thus allow the establishment of links between the NORMAN and the biodiversity community, PARC, e.g. task 8.2. early warning) and the Green Deal.</p>



Participants	<p>Workshop: Workshop of WG2 with participation from members of several other WGs (eg, WG1, WG3). Participants, e.g. from GU (Henner Hollert, Francisco Sylvester, Fabian Weichert, Sabrina Schiwy), UBA (Jan Koschorreck, INERIS (Valeria Dulio), ETH/EAWAG, BfG, RWTH, KWR, CNRS, UFZ, FhG IME, ORU, ACS Stockholm, NIVA, Recetox.....</p> <p>Publication: A co-author team of approx. 20-25+ scientists under the lead of GU and UBA. The authors will mainly consist of speakers and participants of the NORMAN workshop on chemical pollution/biodiversity loss in December 2023</p> <p>Research Project: GU, UBA, FhG-IME, BfG, UFZ, SGN, SLU, Örebro and others</p>
Proposed in-kind contribution	<p>Workshop: Meeting place, an experienced team capable of organizing the workshop and time availability for it. The open WG-2 workshop will be held at the Goethe University in Frankfurt. The organization will be carried out in kind by the Goethe University Frankfurt. Only 3k€ are requested for catering and drinks.</p> <p>Joint Publication: The two publications will be written under the lead and with the strong in-kind contribution of an experienced team at the GU and UBA with contributions from the workshop presenters and other interested participants.</p> <p>Research Project: In the research project, the samples from the environmental specimen bank are provided by UBA and F-IME as an in-kind contribution, and the processing and extraction of the suspended matter are carried out in-kind at Goethe University. EBM investigations of the samples are carried out as an in-kind contribution of Goethe University. In addition to the GU, the F-IME, Örebro, the BfG and the UFZ, other interested parties are also supporting the implementation of EBMs as an in-kind contribution. 7 k€ will be requested for consumables for the EBMs.</p>
Contribution needed from NORMAN Association¹	<p>WG2 Workshop: 3 k€ to be used for workshop venue, catering, and invitation of speakers.</p> <p>Publication: - €</p> <p>Research Project: 7 k€ will be requested for consumables for the EBMs.</p>

¹ Please, provide here a transparent justification of the requested resources and of the in-kind contribution, thereby distinguishing between the costs associated with “person-months” for the organisation, the “travelling costs” for invited speakers and the costs for the logistics (e.g. meals, room rental etc.)