

## Proposals for NORMAN Joint Programme of Activities 2022

<b>Title</b>	Contamination patterns, toxicity fingerprints and toxicity drivers of source-related effluents: Step 2
<b>Type of activity</b>	Pilot study
<b>Leader</b>	UFZ
<b>Topic / activities</b>	<p><b>Background / Justification for the proposed activity:</b>  This JPA is the extension of a study on specific human activities (municipal, industrial, agricultural, waste) that started as a JPA in 2021 focusing on the identification of chemical fingerprints and toxicity profiles in different source-related effluents, to characterize and prioritize source-related footprints for management and to identify and understand discrepancies between toxicity profiles and identified mixtures in order to prioritise sources for toxicity driver identification (EDA). The first stage of this study was performed in 2021 very successfully taking, extracting and analysing more than 100 samples by 10 NORMAN partners. While chemical fingerprinting will be finalized within the next months, toxicity profiling as a basis for future risk driver identification started addressing so far only a very limited number of samples. In order to meet the objectives of the study, it is crucial to test the samples with an array of relevant biotests covering major toxic endpoints. This may be also seen as an important input of NORMAN to PARC addressing particularly Task 4.3 where innovative methods including NTS, effect-based methods and EDA will be explored to investigate the in- and output to/from WWTPs.</p> <p><b>Description of the proposed activity and expected outcomes for 2021 (and beyond):</b>  <i>Activity 1:</i> Toxicity profiling: Extensive screening the chemically characterized source-related samples for a broad scale of endpoints one Ames-Strain (YG 1042) ± S9, direct genotoxicity, PSII-inhibition, algal growth including PSII-Inhibition, estrogenicity and anti-ER, anti-androgenicity, progestagenic-, glucocorticoid-receptor mediated effects, TTR, TR CALUX, luminescent bacteria, AhR, oxidative stress, hPXR.  <i>Activity 2:</i> Mass balance/iceberg modelling to identify discrepancies between observed effects and explainable effects based on extensive chemical screening in order to identify drivers as well as sources with unknown drivers for subsequent EDA.  <i>Activity 3:</i> WG2/3 workshop on the evaluation of the results of the sources study and for identification of future WG activities.</p> <p><b>Added value / Link with other NORMAN activities and / or other projects</b>  The overall project is meant as a pilot study to explore the opportunities and drawbacks of a more source-related approach in NORMAN in order to enhance the value of monitoring, assessment and prioritization towards management and regulation options. The specific Step 2 with a clear focus on biotesting will be a unique proof of concept for effect-based monitoring, will help identify toxicity profiles of important pollution sources and will help linking NORMAN to PARC providing valuable input for mixture risks on a European scale. Being a major collaboration project of WGs2 and 3, its relevance clearly goes beyond preparing future overarching activities across the WGs (involving WGs on prioritization, bioassays, EDA, passive sampling, NTS, water reuse, indoor etc.).</p>
<b>Participants</b>	<p>UFZ (Beate Escher, Werner Brack)  Goethe University Frankfurt (Henner Hollert)  BFG (Sebastian Buchinger)  SLU (Lutz Arends)  HET Waterlaboratorium (Corine Houtman)  INERIS (Selim AitAissa, Valeria Dulio)  University of Copenhagen (Jan Christensen)  Eawag (Juliane Hollender, Tarek Manafi)  INRAE (Cecil Mieghe)  RECETOX (Klara Hilscherova)</p>
<b>Proposed in-kind contribution</b>	Almost all the practical work is based on in-kind contributions including chemical analysis, biotesting and sampling campaign. Support is needed for consumables for the bioassays, and some student assistance is required for the overall logistics in the project.
<b>Contribution needed from NORMAN Association<sup>1</sup></b>	Total: 10 k€

<sup>1</sup> 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.)