

Proposals for NORMAN Joint Programme of Activities 2023

Title	NORMAN Workshop on Innovative Approaches for Environmental Monitoring of Chemical Pollution and Biodiversity – Linking Biodiversity Loss and Chemical Pollution
Type of activity	Workshop
Leader	Goethe University Frankfurt (GUF, Henner Hollert & Francisco Sylvester)/ German Environment Agency (UBA, Jan Koschorreck)/ French National Institute for Industrial Environment and Risks (INERIS, Valeria Dulio)
Topic / activities	<p>Background / Justification for the proposed activity:</p> <p>There have been ground-breaking developments regarding the global importance of chemicals and their release into the environment, which may be significant drivers of biodiversity decline. For the first time, Persson et al (2022) quantified the safe operating space of the planetary boundary of novel entities (i.e., entities that are novel in a geological sense, like chemicals and other new types of engineered materials or organisms, including pathogens and invasive species (Steffens et al. 2015)). The results were alarming and suggest that humanity is already outside the safe operating space of the planetary boundary for novel entities (Persson et al. 2022). Not much later, scientists highlighted the potentially massive link between biodiversity loss and chemical pollution — both phenomena were often studied within subdisciplines but have rarely been studied jointly and across subdisciplines (Groh et al. 2022). Most recently, 50 renowned scientists from all over the world supported the demand of the initiative of the International Panel on Chemical Pollution (IPCP) and several countries to establish a "World Chemicals Council" (Brack et al. 2022). Sigmund et al (2022) strongly warned that chemical pollutants can cause undesired shifts in biological communities and/or ecosystem function, which can affect ecosystem services, but their interlinkages are still little understood. To comprehensively address these complex interactions, joint efforts by interdisciplinary teams of researchers are essential. Until now, both the scientific community and research funders have not fully recognized and adequately responded to this necessity. To overcome the lack of research to adequately quantify the impacts of novel entities on biodiversity and ecosystems it now the time to address anthropogenic drivers and potential levers for transformation, such as strategic action fields, relevant actors, and political and economic governance options.</p> <p>In the last decade, methods to assess chemical pollution and biodiversity in different ecosystem types have greatly evolved. For instances, target and non-target screening allow the detection of very large numbers of contaminants and complex mixtures in environment samples. Organism and eDNA Metabarcoding complement traditional taxonomic identifications and allow much faster and comprehensive biodiversity assessments. A major advantage of these new methods is that the use of material from environmental specimen banks also enables the comparative study of recent and historical samples and thus the investigation of temporal trends. While advanced and innovative screening methods become more and more available, integrative approaches that make use of data on the spatial and temporal changes of both chemical pollution and biodiversity have only just started. The European Green Deal and the Zero Pollution Ambition set ambitious goals for 2050, where innovation is key. Both, chemical and biodiversity research communities are working on the implementation of the suitable indicators and monitoring methods for the various environmental, nature protection and chemical regulations. Effective progress in these fields require interdisciplinary and innovative approaches that overcome the siloisation of research, regulatory efforts and legislation and bring together monitoring of chemicals and biodiversity.</p> <p>Description of the proposed activity and expected outcomes for 2022:</p> <p>General objective: Organization and conduction of a 1.5- or 2-day in-person workshop to build bridges between NORMAN and the biodiversity community in Germany, to (i) discuss the linkage between chemical pollution and biodiversity loss and the implication of the new role of chemical pollution within the theoretical framework of the planetary boundaries, and, (ii) to bring together existing expertise on chemical pollution and biodiversity, promote cooperation, combination of existing databases on both fields, and joint studies that may be published.</p> <p>Task 1: Meeting logistics. This includes finding a suitable venue place for the meeting (the Frankfurt Senckenberg Museum and Frankfurt University are preliminarily proposed), building the participant list, sending along invitations, preparation of a draft programme, and resolution of technical aspects such as catering and remote participation if a hybrid meeting is selected as the most suitable format.</p> <p>Task 2: Identification of speakers for introductory talks to set the basis for discussion, and preparation of those talks. A priori relevant topics include:</p> <ul style="list-style-type: none"> – Keynotes and discussions on the interactions of chemical pollution and biodiversity loss and the planetary boundaries concept – Finding a common basis: presentation of regulatory background, analytical methods and assessment approaches for environmental pollution and biodiversity, – Identify innovative use cases: what questions are key for Green Deal, ZPA, environmental and chemical policy and regulation? – Identification of suitable existing chemical and biodiversity repositories and databases that may be used to ran exploratory analysis in the future.

	<p>Task 3: Discuss the way forward, the implications for the NORMAN Network and possible follow-up activities.</p> <p>Task 4: Writing a joint manuscript as perspective of NORMAN to these emerging questions</p> <p>Added value / Link with other NORMAN activities and / or other projects</p> <p>The present project is related with European programs such as the Zero Pollution Ambition, Biodiversity Strategy, EU Chemicals Strategy for Sustainability, and Zero Pollution Action Plan. Its implementation within NORMAN will very much facilitate a successful completion, aided by the large network of chemical and ecotoxicological expertise and organization provided by the network. NORMAN bridges to policy and regulatory relevant stakeholders will allow far-reaching effects of its conclusions in the future.</p> <p>This JPA will contribute to set the bases for further future cooperation between organisms related to analytical chemistry, chemical pollution and biodiversity in Germany. As such, we expect it to have a positive impact on the difficult task of better understanding and mitigating the ecological effects of chemical pollution.</p>
<p>Participants</p>	<p>Cross-cutting workshop with relevance for NORMAN in general and several WG.</p> <p>Participants eg. from GU (Henner Hollert, Francisco Sylvester, Sarah Johann, Sabrina Schiwy), UBA (Jan Koschorreck, INERIS (Valeria Dulio), ETH/EAWAG, CNRS, UFZ, FhG IME, ORU, ACS Stockholm, NIVA Recetox..... together with experts from the biodiversity community, ETC Biodiversity, data banks and digital science.</p>
<p>Proposed in-kind contribution</p>	<p>Experienced team capable of organizing the workshop and time availability for it. Capability and institutional contacts to provide an adequate venue place that maximizes results and impacts of the workshop. Large list of colleague contacts in the fields of chemistry, ecotoxicology, and ecology, that will be complemented to those provided by NORMAN to reach the adequate participants. Expertise (either in the GUF and RobustNature consortium, or through the invitation of leading colleague experts in the relevant fields) to prepare the keynote talks that frame the different parts of the workshop.</p>
<p>Contribution needed from NORMAN Association¹</p>	<p>5000 € to be used for workshop venue, catering, and invitation of speakers</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.)