

## Proposals for NORMAN Joint Programme of Activities 2024

<b>Title</b>	<b>Combining Wastewater-Based Epidemiology and indoor dust analysis for comprehensive evaluation of chemical exposure risks in indoor environment.</b>
<b>Type of activity</b>	
<b>Leader</b>	Barbara Kasprzyk-Hordern, Werner Brack, Sara Castiglioni, Lisa Emily Melymuk
<b>Topic / activities</b>	<p><b>Background / Justification for the proposed activity:</b></p> <p><b>Wastewater</b> represents a fingerprint of a city's metabolism. It is a complex mixture of substances of biological and chemical origin including indoor environment community stressors such as hazardous chemicals and their human transformation products. The quantitative measurement of these substances continuously pooled by the water system can provide evidence of community-wide exposure to these chemicals. While wastewater is a source for environmental pollution in NORMAN, the extension of wastewater screening as a proxy for domestic exposure (e.g. from indoor environment) will provide a valuable benefit for the identification and prioritisation of hazardous chemicals, which is a major focus of NORMAN. This approach also helps to better link the efforts of the WG on indoor environments to the water related activities in NORMAN and provides relevant data for NORMAN databases. Water-based chemical mining (also known as WBE – Wastewater Based Epidemiology) utilizing metabolic biomarkers of exposure and effects that are produced collectively by studied populations and ultimately end up in urban water, provides a timely complimentary tool to traditional biomonitoring approaches. Similarly, chemicals emitted indoors are present in <b>indoor air and dust</b>, which is yet another, important matrix enabling chemical exposure studies.</p> <p><b>This proposal aims to combine the investigation of indoor environments (DUST) and human community exposure via wastewater analysis (WBE) to provide a new, holistic framework for comprehensive understanding of human exposure risks to hazardous chemical mixtures in indoor environments.</b> This will be done via an integration of three key ongoing activities in Europe:</p> <ul style="list-style-type: none"> <li>- WBE pan-European monitoring program planned in 2024 in <b>PARC</b> (4.3_E01 → Mining chemical information in wastewater for human community and environmental exposure assessment),</li> <li>- <b>SCORE</b> network activities focused on annual WBE monitoring campaigns,</li> <li>- <b>Norman WP6</b> on Indoor environments and ambient air</li> </ul> <p>Objectives:</p> <ol style="list-style-type: none"> <li>1. To analyse existing WBE and DUST datasets with an aim of signposting commonalities in tested chemical targets as well as geographies covered.</li> <li>2. To establish common sampling/sites protocols for WBE-DUST integration.</li> <li>3. To align existing WBE and DUST monitoring activities across Europe with and aim of delivering first WBE-DUST pan-European study focussed on human exposure to chemical mixtures in indoor environments.</li> </ol> <p><b>Description of the proposed activity and expected outcomes for 2024:</b></p> <ol style="list-style-type: none"> <li>1. Analysis of existing WBE, DUST datasets with an aim of signposting commonalities in tested chemical targets as well as geographies covered.</li> <li>2. Establishment of common sampling/sites protocols for WBE-DUST integration.</li> <li>3. The first WBE-DUST pan-European study focussed on human exposure to chemical mixtures in indoor environments.</li> </ol> <p><b>Added value / Link with other NORMAN activities and / or other projects</b></p> <p>We will facilitate direct links with WP6 activities. WBE provides yet another dimension to already existing activities focussed on environmental exposure, as well as the development of new mass spectrometry tools and data visualisation. We will deliver an extensive dataset of cumulative chemical exposure at the community level.</p>
<b>Participants</b>	UBAH, UFZ, RECETOX, UniAnt, Mario Negri Research Institute, Universitat Jaume I - This is just an initial list, likely to be significantly expanded.
<b>Proposed in-kind contribution</b>	Via PARC activities: pan-European WBE study, including extensive datasets produced as a results of PARC monitoring, access to samples/monitoring sites. Via SCORE, know-how on WBE pan-European monitoring and interlab
<b>Contribution needed from NORMAN Association<sup>1</sup></b>	Physical meeting (meals, room rental) Interlab study/cost of standards and shipment of standards across Europe (contribution to costs)

<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.)



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