

Proposals for NORMAN Joint Programme of Activities 2023

Title	Non-target screening in soils – towards harmonized methods and a priority list
Type of activity	Analytical study/ interlaboratory study
Leader	UBA
Topic / activities	<p>Background / Justification for the proposed activity:</p> <p>Screening of soil samples in support of chemical management</p> <p>Numerous substances reach soils from various sources and applications. Effects of single substances and (unknown) mixtures are of high concern and not much is known about chemicals in soil so far. Targeted screenings usually include a small number of compounds only, such as heavy metals and selected organic compounds.</p> <p>Non-target screening (NTS) is a novel method that uses high-resolution mass spectrometry after separating compounds by chromatographic methods and identifies the resulting molecule fragments by a data-processing software. Non-target screening has the potential to identify substances that had not been looked for so far and thereby close regulatory gaps. Whereas NTS in water is methodically well developed, NTS in soil faces a couple of challenges, such as appropriate extraction methods and matrix effects caused by humic substances. Moreover, detection limits are still rather high and quantification of the discovered compounds is by non-targeted measurements is not possible.</p> <p>The project tackles these challenges with the following objectives:</p> <p>1) Proof of concept for NTS in soil samples: A bunch of methods for NTS in soils are tested and a suitable method is refined and improved by means of extraction method, detection limits, matrix effects and quantification. A semi-quantitative method is developed which is suited for standardisation and can in perspective be used by authorities.</p> <p>2) First results in the course of method development and measurements of further samples give a broad picture of substances present in soils across Germany and punctually in other countries. On that basis a draft prioritisation-list of contaminant candidates in soils is developed.</p> <p>A brainstorming workshop on NTS in terrestrial samples (soils) took place online on April 21st, 2022 with experts from UBA and the NORMAN network from working group 7. The NORMAN working group 7 (WG 7) focuses on terrestrial environment and is co-headed by the UBA-section II 2.6., measures of soil protection. The experts discussed the potential of NTS in terrestrial samples such as soils. Areas of common interest between NORMAN and UBA were identified as well as the need for further research for instance on assessment approaches and prioritization of chemicals in soils.</p> <p>Added value / Link with other NORMAN activities and / or other projects</p> <p>EU Chemicals Strategy, Zero Pollution Ambition, PARC, (EU Soil strategy)</p>
Participants	Terrestrial WG 7
Proposed in-kind contribution	Funding for project available
Contribution needed from NORMAN Association¹	e.g. laboratory infrastructure

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.)