Proposals for NORMAN Joint Programme of Activities 2025

Title	**Sourcing of plastics materials of interest for future ILS**
Type of activity	Preparatory work for ILS
Leader	Bert van Bavel (NIVA) and Ralf Kaegi (Eawag)
Topic / activities	***Background / Justification for the proposed activity:*** The focus of interlaboratory studies (ILS) in the field of microplastic particles (MP) has primarily been on common polymers. The last ILS organised by NORMAN WG4 have been conducted using relatively 'simple' materials. However, there an urgent need to also include more challenging materials and particle morphologies. Based on the literature and including demands from the European Union (EU) we suggest considering the following materials and particle morphologies for further ILSs. **Fibres:** MP fibres are one of the most prevalent forms of MP in the environment, particularly in marine and freshwater systems. Fibres originate from synthetic textiles, fishing nets, and other sources. Only one attempt was made to include fibres into an ILS and currently no reference material for fibres exists. **Paint particles:** MP paint particles are a significant source of pollution, especially in marine environments. They originate from sources like ship coatings, road markings, and household paints and were highlighted by the EU as one of the main sources of MP in the environment[1]. At present no reference materials containing paint particles exist and no ILS have been performed. **Tire particles:** In addition to paint particles, tire wear particles are an important source of MP in rivers and oceans (EU report[1]), possibly posing a greater environmental risk than other types of MP due to their widespread occurrence, broad size range and harmful additives. For tire wear particles, reference materials and analytical challenges have to be addressed. **Biodegradable plastic particles (BPP)**: BPP require specific conditions to fully degrade, such as certain temperatures, humidity levels, and microbial presence. These conditions are not always met in (natural) environments, leading to incomplete degradation and the formation of MP. Detergent capsules, often containing water dissolvable polymer coatings, and biodegradable plastics were highlighted in the EU document and for this group of plastics no reference materials are available, and ILS are still lacking. Within the proposed activities, we will explore the possibilities of sourcing sufficient amounts of the proposed materials and test their suitability for an ILS. Fibre materials will be acquired from commercial sources. Sika, for example, provides polypropylene and cellulose fibres with diameters between 20 and 30 µm and length of 0.2 – 5mm. For an initial feasibility, fibres will be imaged on an optical microscope and then immobilized using the sandwich filter concept. In case suitable fibres can be found, we envisage to deposit 5 natural (cellulose) and 5 synthetic (e.g., polypropylene) fibres and an Anodisc filter, which will then be pressed between to infrared (IR) transparent windows. For other materials, an analogue procedure is foreseen. In parallel, the suitability of the materials, for incorporation into water soluble soda tablets will also be evaluated. ***Description of the proposed activity and expected outcomes for 2025:*** The activity will involve the acquisition and testing of polymeric materials, which are of interest / concern on an EU level. After sourcing the different materials from commercial sources and research repositories, feasibility tests will be conducted using sandwich filter and / or soda tablet approaches. We will summarize the results of the feasibility experiments in a report and will recommend the most suitable materials for an ILS to be organise in 2026. The timeline for assessing the different materials is as follows: Fibres Q1 (2025), Tire particles Q2 (2025), Biodegradable particles Q3 (2025), Paint particles Q4 (2025), Feasibility report Q4 2025. ***Added value / Link with other NORMAN activities and / or other projects*** The JPA is in-line with NORMANs aim to encourage the validation and harmonisation of measurement methods and monitoring tools. The JPA reflects WG4s goal to establish a platform facilitating access to research infrastructure and promoting exchanges of methods and materials. Reference materials and ILS are urgently needed in this new field as highlighted by the successful ILS organised by WG4 where many NORMAN members participated. The proposed materials were identified based on discussions and request of earlier ILS on MP and on the EUs source identification report. [1]European Commission: Directorate-General for Environment, EU action against microplastics, Publications Office of the European Union, 2023, https://data.europa.eu/doi/10.2779/917472
Participants	NIVA, Eawag, UVA, Chiron
Proposed in-kind contribution	NIVA: 2 500€ in collaboration with PlasticTrace
Contribution needed from NORMAN Association[1]	9'000 €

[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.)