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Micro- and nanoplastics in drinking water - survey in Sweden

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- The National Food Agency of Sweden (NFA; Livsmedelsverket) has received an assignment from the government. The NFA shall:
 1. compile knowledge of health risks with microparticles and nanomaterials of plastics and especially after consumption of drinking water,
 2. map the presence of such contaminants in drinking water in Sweden,
 3. and as needed, propose measures to reduce the exposure
- The assignment shall be reported no later than 15 December 2019

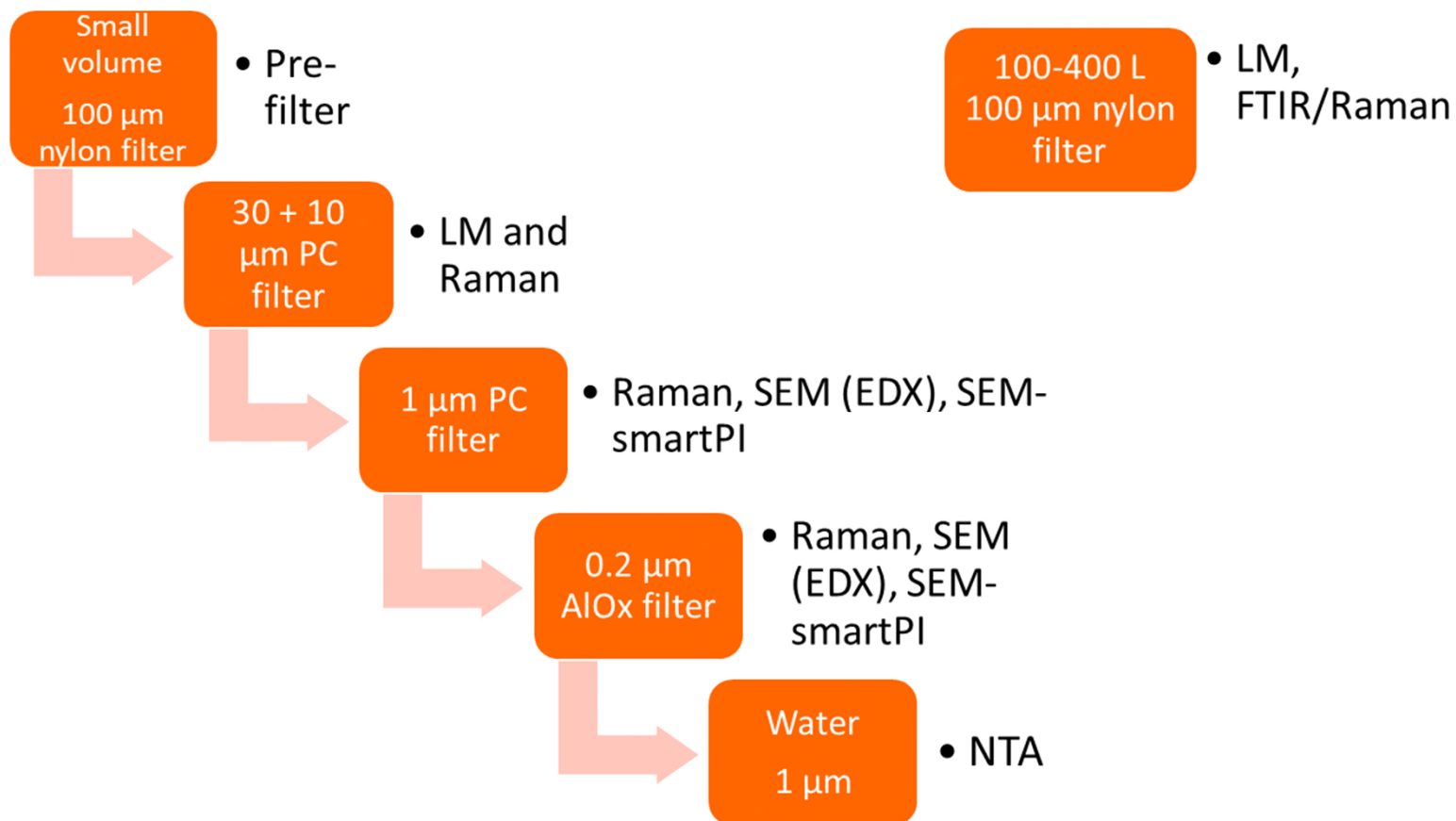
- No standardized sampling or analytical methods
- Time-consuming analytical methods (sequential filtration, visual characterization/quantification, identification (μ Raman, μ FTIR))
- No analytical method for nanoplastics (below $0.1 \mu\text{m}$)

Sampling

- 10 sampling locations in Sweden; twice sampled (summer, winter) from
 - Large lakes, historical presence of pollutants (both ground- and surface water sources)
 - Tap water sampled on 2 different occasions
- University of Gothenburg
- Suitable sampling device
- Lower analytical limit 0.2 μm



Sampling method



Sampling and analytical challenges

- 100 μm ; a lot of sedimentation, bio-film, iron oxide
- 10 μm ; organic matter clogging smaller pore size filters
- Not an even distribution of particles on filters
- Purification of the filters is time-consuming
- This has resulted in
 - reduction of samples, from 10 to 6 locations
 - Risk of fewer results from lower filter pore sizes (1 μm and 0.2 μm)

Finalisation of the project

- Chemical analysis of microplastics will be finalized this summer
- A compilation of knowledge of health risks with microparticles and nanomaterials of plastics by the oral route is almost finalized
- An assessment report to the government in December 2019

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