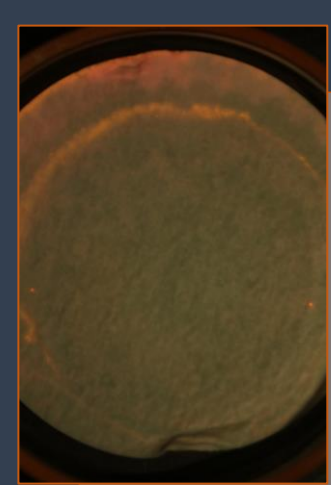


Sampling airborne microplastics and fibers: lessons learned from Aveiro, Portugal

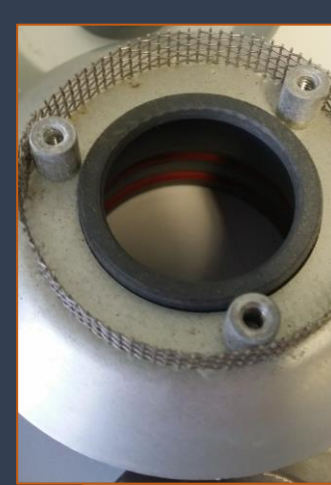
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Sampling airborne microplastics and textile fibers, in both indoor and outdoor environments, presents methodological challenges despite their wide distribution in the environment¹. These stem from relatively low concentrations, confounding particles, difficult identification, and cross contamination of samples. From trial and error, improvements were achieved in three key levels: strict contamination control measures, sampling and sample preparation, and particle identification.

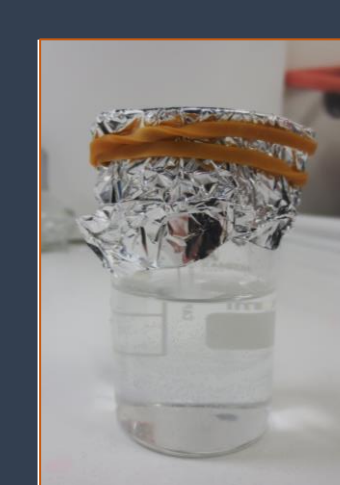
Contamination Control



Filters
 Burning glass fiber filters, storing and weighting in clean glass Petri dishes.

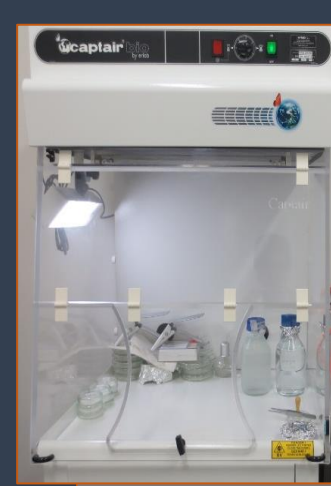


Sampling Equipment
 Thorough cleaning of sample equipment between samples.



Solutions and materials
 Filtering all working solutions, using all glass or metal materials with proper cleaning, covering with lids or aluminum foil.

Fibers and microplastics are common contaminants of indoor air. Strict contamination control measures are required to produce reliable results², with the particularity of sampling equipment decontamination³.

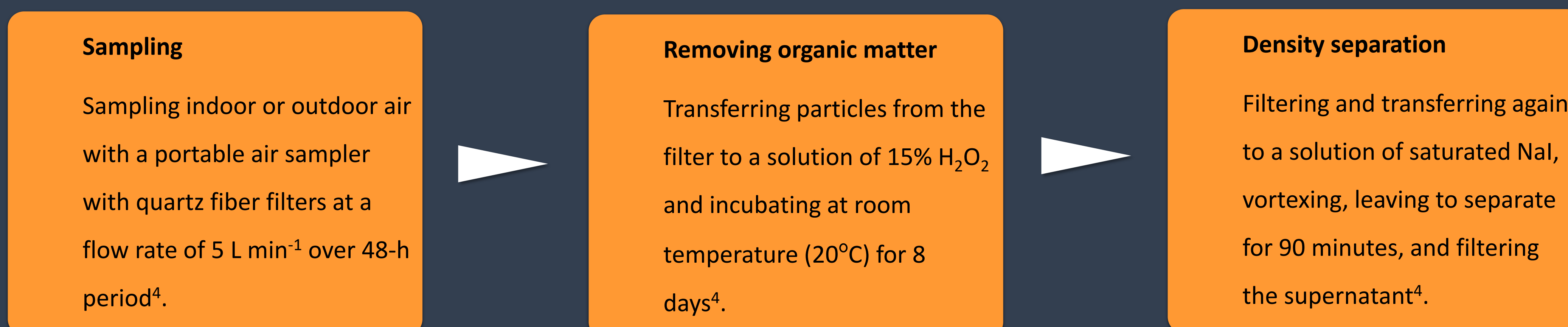


Clean conditions
 Working under the laminar flow hood, in a room with limited access, wearing cotton lab coats.

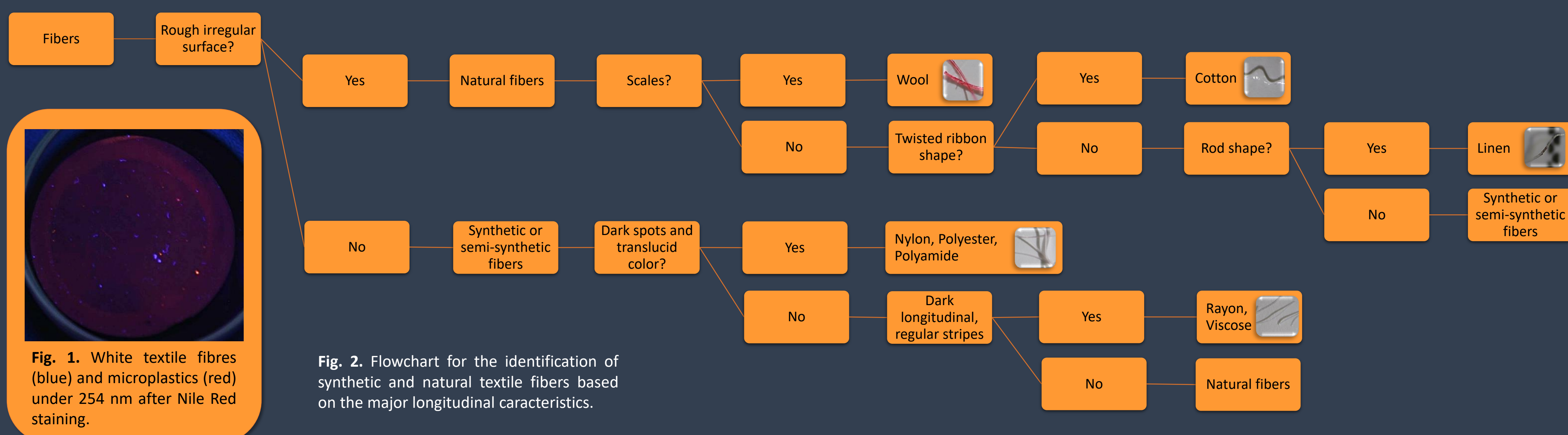


Blanks
 Conducting blanks throughout the process: field blanks, procedural blanks, and open filters for air deposition.

Sampling and Sample Preparation



Identification



Fibres: conducted under the stereomicroscope following a flowchart. Length can be determined on photographs using ImageJ⁴.

Microplastics: can be identified by staining the filter with 0.01 mg.mL⁻¹ of Nile Red and observed under 470 nm with an orange filter or under 254 nm. Fluorescent particles in photographs can be measured in ImageJ⁵

References: 1. Dris et al. 2017 [10.1016/j.envpol.2016.12.013](https://doi.org/10.1016/j.envpol.2016.12.013); 2. Prata et al. 2021 [10.1016/j.jhazmat.2020.123660](https://doi.org/10.1016/j.jhazmat.2020.123660); 3. Prata et al. 2020 [10.1016/j.marpolbul.2020.111522](https://doi.org/10.1016/j.marpolbul.2020.111522); 4. Prata et al. 2020 [10.1016/j.mex.2019.11.032](https://doi.org/10.1016/j.mex.2019.11.032); 5. Prata et al. 2020 [10.1016/j.scitotenv.2020.137498](https://doi.org/10.1016/j.scitotenv.2020.137498).

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