PFAS Sampling Techniques for EPA Methods 533/537.1

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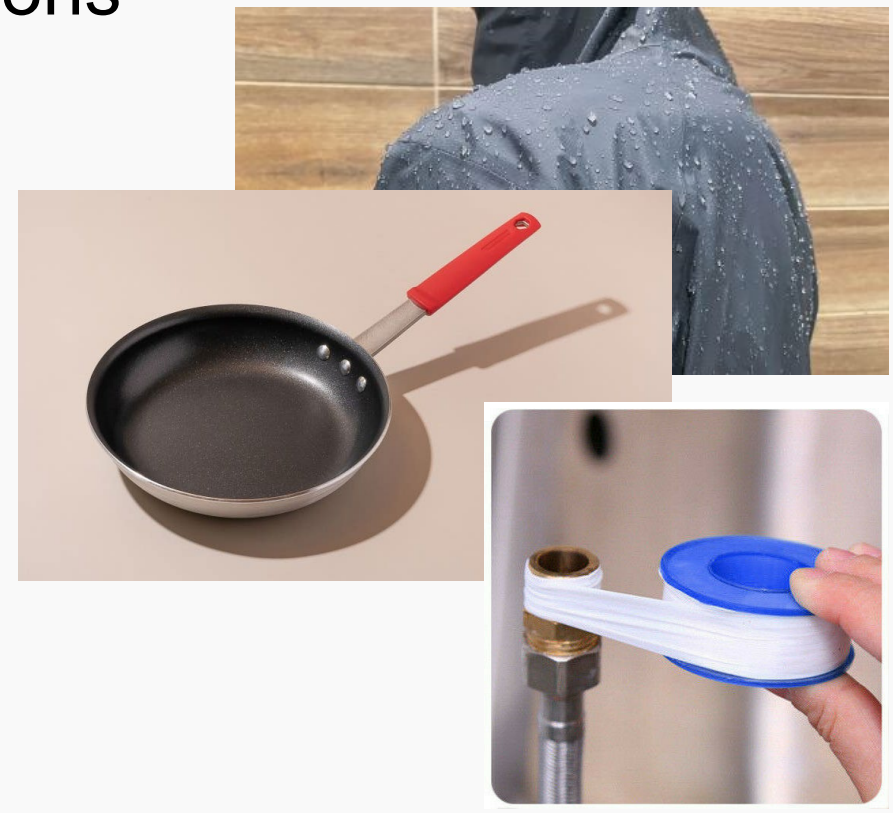
Overview

- This presentation is based on the following EPA Region 1 Standard Operating Procedures for:
  - The Collection of PFAS Samples in Water
  - The Analysis of Perfluorinated Alkyl Acids in Water HPLC/MS/MS (537.1)
  - The Analysis of PFAS in Water by Isotope Dilution HPLC/MS/MS (533)

Presentation Topics

- Laboratory Considerations
- PPE, Supplies, & Containers
- Pre-Sampling
- Sampling Steps
- Post-Sampling



Laboratory Considerations

Before sampling, ensure you understand all laboratory instructions, including Chain-of Custody and sample check-in/delivery requirements

Matrix Interferences

- Caused by other contaminants present in the sample
- Vary from source to source
- Organic carbon, surfactants, dissolved solids, etc.

Method Interferences

- Solvents or reagents (including reagent water)
- Sample bottles and caps
- Common sample processing hardware

For these reasons, the collection of field and laboratory reagent blanks (FRBs and LRBs) is required!

PPE, Supplies, & Containers

PPE/Clothing

- Avoid wearing clothing/footwear containing Gore-tex/Tyvek, or stain/water repellent materials
- Use PFAS-free sunscreen and insect repellent, if possible
- Read labels/products descriptions carefully
- Encourage use of engineering controls (fans, canopies, etc.)

Supplies

- Use wet ice (preferred) – blue ice not recommended
- Avoid use of adhesive products, waterproof paper/books
- Consult state guidance on acceptable writing utensils (Sharpies vs. ball point pens)
- Materials free of Teflon (i.e. Teflon tape at plumbing joints, groundwater tubing)

Containers

- Only use containers that have been provided by the lab
  - HDPE (High Density Polyethylene) or HDPP (High Density Polypropylene)
  - Ammonium Acetate preservative (for Method 533)
  - Trizma Pre-Set Crystals preservative (for Method 537.1)
    - White, salt-like crystal
    - pH adjustment and removes free chlorine

Pre-Sampling Procedures

Before Mobilizing to Site:

- Cover the carpet of your vehicle with plastic sheeting prior to loading equipment as PFAS has been detected in carpeting
- Use a trash bag as a liner when storing the ice and samples in the cooler – helps control leakage and prevent cross-contamination
- If possible, transport samples/coolers in an entirely separate vehicle from other sampling equipment and gear

Upon Arrival

- Establish a staging area away from sampling area

Collection of Samples

- Wash hands and don nitrile gloves
  - Change gloves frequently to avoid cross-contamination
- Collect PFAS samples first if you are collecting samples for multiple analyses!
- "Clean Hands/Dirty Hands" Technique
  - The "clean hands" sampler dons nitrile gloves. Roll up sleeves if wearing long sleeve shirt.
  - The "dirty hands" sampler washes the gloved hands of the "clean hands" sampler with DI water.
- Do not remove bottle from zip-lock bag until you are ready to sample (within 5 minutes)

Collection of Samples, cont.

- Remove cap WITHOUT touching the inside of the cap or around the edge of the container lip
- Fill the container to the neck (or to labelled fill line), replace cap and tighten.
  - Avoid overfilling container or flushing out preservative
  - Do not reopen container
- Invert container multiple times to dissolve preservative
- Label the sample, as appropriate, using PFAS-free label

Post-Sampling Procedures

- Place the container back into the zip-lock bag immediately after sample collection
- Place bagged sample into cooler on ice as soon as possible
- Decontaminate non-dedicated equipment using PFAS-free DI water and Alconox/Liquinox
  - After each sample location and at end of workday

Helpful Resources

PFAS Analytical Methods Development and Sampling Research

- https://www.epa.gov/water-research/pfas-analytical-methods-development-and-sampling-research

Questions?

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