

SAMPLING PROCEDURE FOR PFAS

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OVERVIEW

- PFAS can be found in many commonly used products
- Detection limits are very low
- Care must be taken to avoid cross-contamination while sampling
- A conservative approach is recommended due to limited availability of published research on cross-contamination
 - Preferable to "err on the side of caution" and limit PFAS in sampling environment

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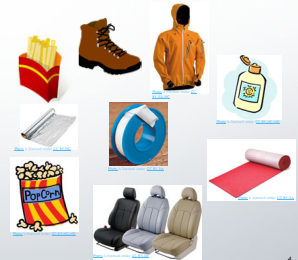
PFAS: PER- AND POLYFLUOROALKYL SUBSTANCES

- PFAS acronym used to describe a large class of compounds
- Synthetic compounds formed from carbon chains with fluorine atoms attached
- Inert, persistent, bioaccumulative
- In use since the 1940s
 - Water, oil, and stain resistance and surfactant properties allow for many consumer product applications
 - Also used for many industrial applications

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CROSS-CONTAMINATION POTENTIAL

- PFAS can be found in many commonly used products
 - Clothing and shoes, especially if water or stain resistant
 - Food packaging (fast food, packaged food such as granola bars, etc.)
 - Carpet and upholstery
 - Personal care products, sunscreen, insect repellent
 - Waxes, coatings, and paints
 - PFAS are often used in the production of Teflon®/PTFE and other fluoropolymers



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WHAT TO DO DIFFERENTLY WHEN SAMPLING FOR PFAS?

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METHOD 537 SAMPLING INSTRUCTIONS

- 8. SAMPLE COLLECTION, PRESERVATION, AND STORAGE
 - 8.1 SAMPLE BOTTLE PREPARATION
 - 8.1.1 Samples must be collected in a 250-mL polypropylene bottle fitted with a polypropylene screw-cap.
 - 8.1.2 The preservation reagent, listed in the table below, is added to each sample bottle as a solid prior to shipment to the field (or prior to sample collection).

Compound	Amount	Purpose
Trizma®	5.0 g/L	buffering reagent and removes free chlorine

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METHOD 537 SAMPLING INSTRUCTIONS

- 8.2 SAMPLE COLLECTION
 - 8.2.1 The sample handler must wash their hands before sampling and wear nitrile gloves while filling and sealing the sample bottles. PFAS contamination during sampling can occur from a number of common sources, such as food packaging and certain foods and beverages. Proper hand washing and wearing nitrile gloves will aid in minimizing this type of accidental contamination of the samples.
 - 8.2.2 Open the tap and allow the system to flush until the water temperature has stabilized (approximately 3 to 5 min). Collect samples from the flowing system.
 - 8.2.3 Fill sample bottles, taking care not to flush out the sample preservation reagent. Samples do not need to be collected headspace free.
 - 8.2.4 After collecting the sample, cap the bottle and agitate by hand until preservative is dissolved. Keep the sample sealed from time of collection until extraction.

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FROM LABORATORY

SAMPLE BOTTLES AND BLANK WATER	PRESERVATIVE
<ul style="list-style-type: none"> • HDPE bottles provided by lab <ul style="list-style-type: none"> • Unlined lids • HDPE used to minimize adsorption to bottle • PFAS-free water for blanks to be provided by lab • Ask lab about holding times 	<ul style="list-style-type: none"> • Trizma® • White crystalline powder • Added to sample bottles in advance by lab • Do not rinse or overfill bottle <ul style="list-style-type: none"> • Overflowing the bottle could flush out the preservative. • Headspace is okay. Check with lab on filling level/volume requirement.

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TO AVOID CROSS-CONTAMINATION


- Store bottles in "clean" box or cooler
 - (e.g., do not place on seat of car, in clothing pocket, or other temporary storage)
- Wash hands with PFAS-free water and PFAS-free soap/detergent
 - Do not touch anything before putting on gloves
- Wear clean, disposable nitrile gloves while filling and sealing the sample bottles
 - Do not touch anything other than sample bottle after putting on gloves
 - Change gloves after turning on tap
 - Only open bottle during sample collection
 - Do not put sample bottle cap down on surfaces and do not touch inside of cap
 - Cap bottle immediately and place in sealable polyethylene bag
- Sample for PFAS and associated blanks first if collecting other samples
- Do not use "blue ice" packs in sample cooler



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COMMON PRODUCTS TO AVOID DURING SAMPLING

<ul style="list-style-type: none"> • Packaged food and fast food • Blue ice/chemical ice • Aluminum foil • Adhesives (e.g., sticky notes, labels, tape) <ul style="list-style-type: none"> • Wash hands after applying labels • Waterproof paper and notebooks • Permanent markers • Cables and coated wires, windshield wipers • Plumber/thread sealant tape and plumbing paste 	<ul style="list-style-type: none"> • Water or stain resistant clothing, shoes, bags, and upholstery <ul style="list-style-type: none"> • Rain gear • Flame resistant clothing • Coated Tyvek® suits <p>Recommended to wear clothing that has been washed at least six times</p> <ul style="list-style-type: none"> • No fabric softener
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PERSONAL CARE PRODUCTS TO AVOID

PFAS or related compounds could be found in some formulations of personal care products. Some commonly cited examples:

<ul style="list-style-type: none"> • Moisturizers and creams • Cosmetics (e.g., eye shadow, face powder/foundation, bronzer, blush, mascara, nail polish) • Dental floss • Shaving cream • Shampoo, hair conditioner 	<ul style="list-style-type: none"> • Sunscreen • Insect repellent <p>"Natural" products can be used – check ingredients</p>
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FIELD REAGENT BLANKS (FRB)

- Collected at each site
 - At the sample site, transfer lab-provided reagent water to lab-provided empty sample bottle
 - FRB only needs to be analyzed when associated field sample has a detection greater than the MRL

From Method 537:

8.3.1 A FRB must be handled along with each sample set. The sample set is composed of samples collected from the same sample site and at the same time. At the laboratory, fill the field blank sample bottle with reagent water and preservatives, seal, and ship to the sampling site along with the sample bottles. For each FRB shipped, an empty sample bottle (no preservatives) must also be shipped. At the sampling site, the sampler must open the shipped FRB and pour the preserved reagent water into the empty shipped sample bottle, seal and label this bottle as the FRB. The FRB is shipped back to the laboratory along with the samples and analyzed to ensure that PFASs were not introduced into the sample during sample collection/handling.

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