

# *Automated Sample Preparation for PFAS in Soils Prior to LC-MS/MS as a Fast Screening Procedure*

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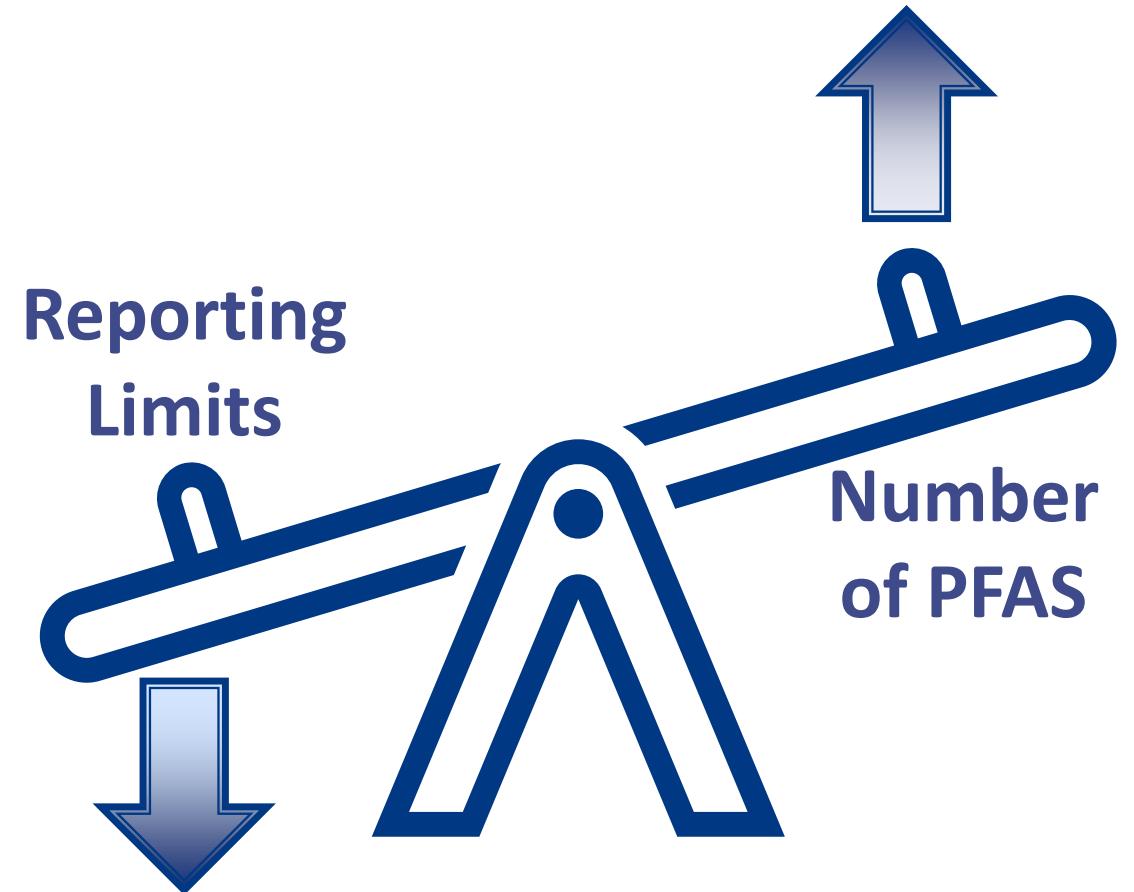


Environment Testing

# Evolution of PFAS testing

- Need for Speed

Reporting  
Limits



# Where to begin?

## WHAT WILL THE DATA BE USED FOR?

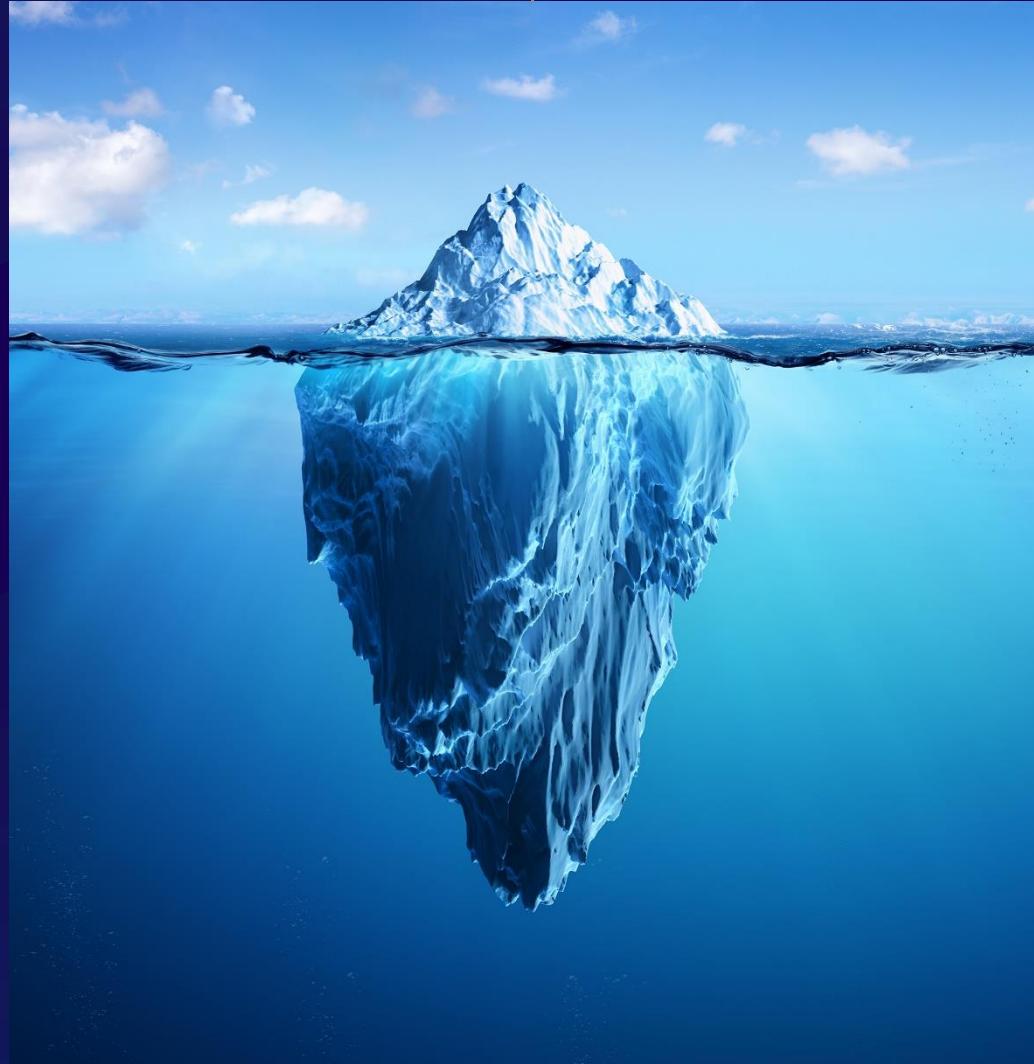
Developing a Conceptual Site Model?

Determining the extent of  
contamination?

Investigating sources of contamination?

Assessing human health impacts?

Implementing a remediation plan?



# Why Screen samples?

- Highly contaminated areas
  - Protection of laboratory
  - Detect hot-spots in the field & plan drilling/excavation/remediation

Water- Dilute and Shoot

Soil- extract, dilute and shoot

More sample handling, more contamination,

Image of AFFF in solution > shaken

# Automated- Rapid Screening



 eurofins

Environment Testing

# Screening Non-Potable Water, Soils, Biosolids and Tissues



Office of Water

[www.epa.gov](http://www.epa.gov)

December 2024

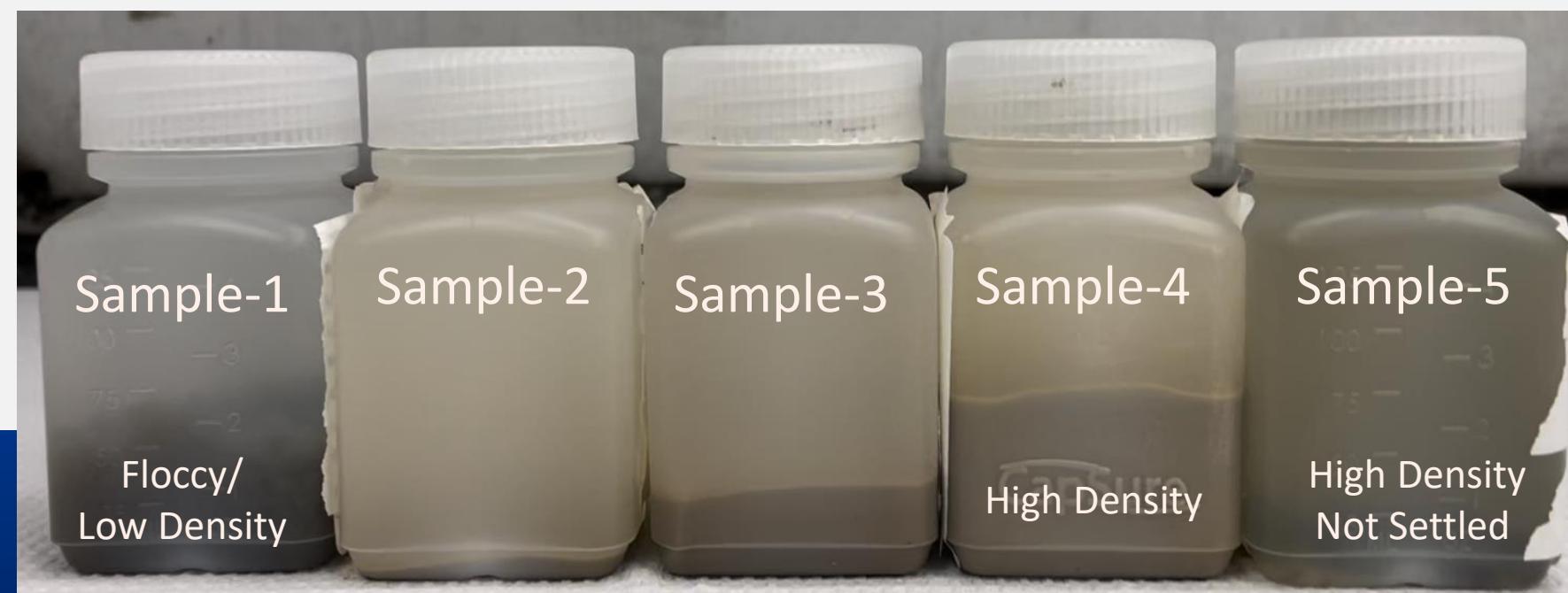
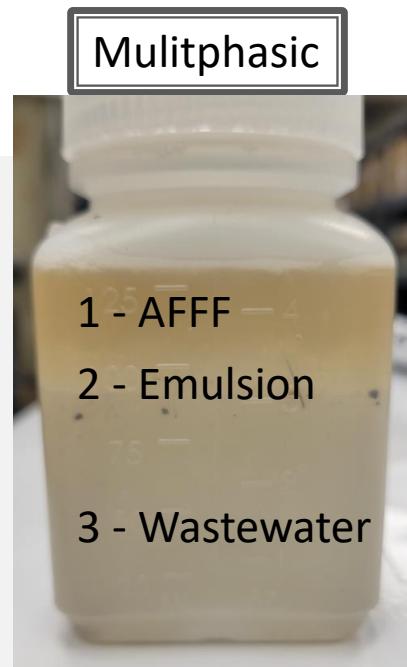
## Method 1633, Revision A

**Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS**



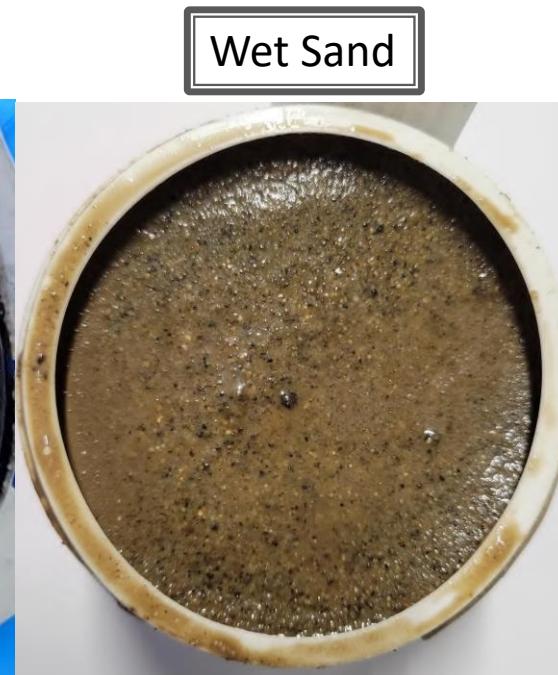
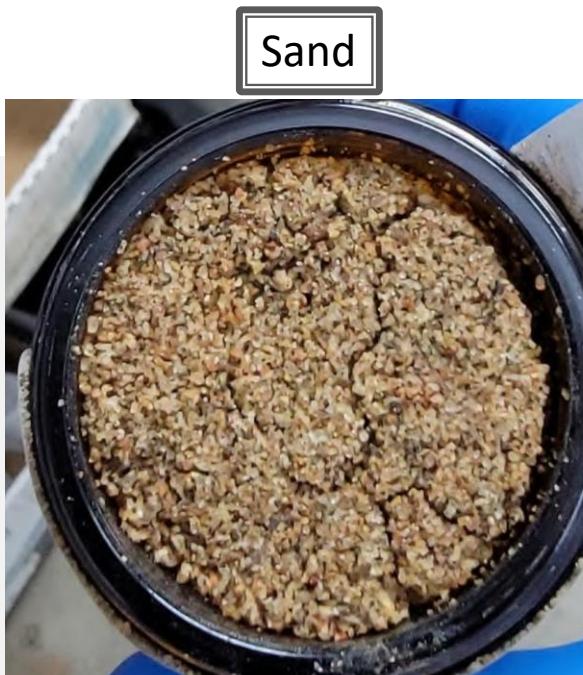
# Aqueous Samples:

- Aqueous (not solvent)
- Low TSS (<50mg/bottle)
- Cannot filter
- Does not foam
- Not multiphasic
- Homogenous



# Solid Samples:

- Solid (%Moisture < 80%)
- Homogeneous & < 1mm
- No organic material
- No large rocks
- No invertebrates
- No foreign objects



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Clay



Clay with water\*



Cannot be mixed

Mud with Rocks\*



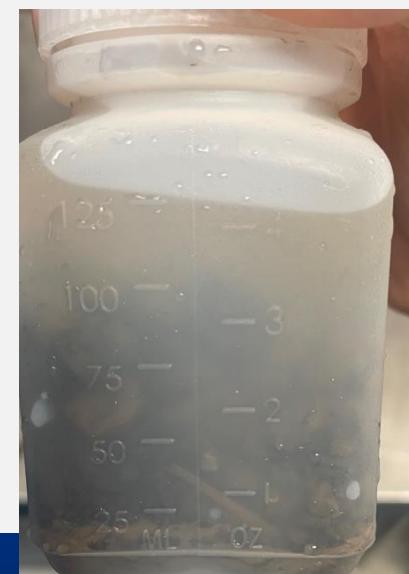
Can be mixed, avoid rocks



Wet soil with Sticks\*



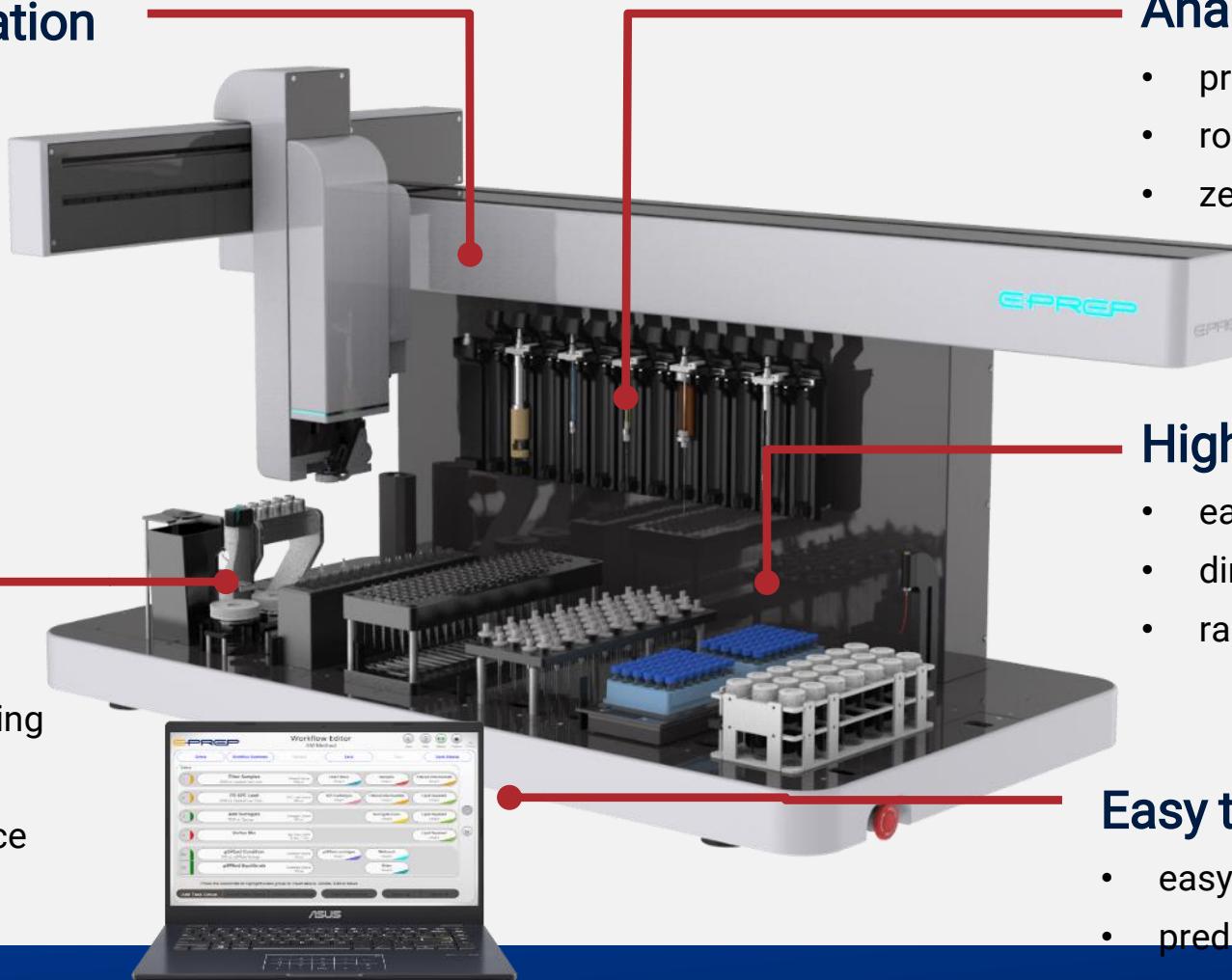
Organic Matter, no Soil\*



Gravel topped with water\*

## Complete Robotic Operation

- One ePrep will feed multiple analytical instruments
- unattended operation
- process repeatability



## Modular Accessories

- sample filtering
- vortex and magnetic mixing
- SPE standard and micro
- direct mass spec interface

## Analytical Syringe Operation

- precision, accuracy even at low volumes
- robotic tool change
- zero carryover

## Highly Flexible

- easily used for 5-100 samples
- direct to your autosampler rack
- rack configuration is not fixed

## Easy to Use Software Control

- easy graphical interface
- predefined templates and tasks

# Features / Benefits Overview

Benefit	ePrep Operation	Advantage
<b>Stand Alone</b>	Modular Rack	Prepare directly into the autosampler vial – Complete flexibility, prepare for multiple instruments.
<b>Improve Productivity</b>	Unattended Operation	Feed multiple instruments from a single ePrep with unattended day and night operation
<b>Reduced Staff Training</b>	Predefined Tasks, Syringes, Tools, Racks and Vials are simple to program and operate	Workflows can be operated with ease by Laboratory Assistants with minimal training
<b>Optimise Resources (more with less)</b>	Entire robotic Operation with minimal human input	Use your team for tasks requiring human judgement and decision making, and let ePrep do the boring stuff.
<b>More Samples without additional cost.</b>	24/7 operation allowing sample prep when everyone has gone home.	More samples in but not necessarily more people
<b>Improve Results Reliability</b>	It's a robot and will do the same task reproducibly all day and all night	Results are independent of the operator eliminating errors, saving time, and avoiding repeats.
<b>Drive Profitability</b>	More samples in without addition of human resources.	Improved financials - higher efficiencies and better economics.
<b>Validation and Compliance</b>	ePrep records all operations associated with the User, a Workflow and Input/output vial.	Chain-of-Custody report and compliance
<b>Next Generation Laboratory</b>	Cutting edge technologies allow new techniques such as $\mu$ SPE, filtering and positive pressure SP.E	Capabilities for future-proofing the chromatography laboratory
<b>Works like Robot</b>	ePrep does repetitive work like a robot	Have your scientists do science and avoid RSI

# Screening Better (sunscreen)

A thick orange line starts at the top right and curves down and to the left, ending at the bottom left corner of the slide.

## Goals

- Fast & Hands-Free
- Comparable at high concentration
- Matrix Robustness & Instrument protection



# THANK YOU

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