

Tool 2.6: Considerations for Selecting a Method of PFAS Testing

LIMITATION: The following table represents the state of testing methods as of January 2022. EPA, DoD, and other agencies are leading ongoing research and technology evaluation, and users of this guide should refer to those agencies for the most up-to-date information on testing methods and their applicability to the sampling project in question.

Environmental Media Compatible with Each Testing Method					
	Wastewater	Surface Water	Groundwater	Drinking Water	Non-Drinking Water
EPA Draft Method 1663	X	X	X		
EPA 8327	X	X	X		
EPA Method 537 and 537.1				X	
Method 537 Modified	X				X
EPA Method 533	X			X	
ASTM D7968-17a	X				
ASTM, D7979-20	X				X
Environmental Media Compatible with Each Testing Method					
	Soil and Sediment	Solid Matrices	Biosolids	Landfill Leachate	Fish Tissue
EPA Draft Method 1663	X		X	X	X
EPA 8327					
EPA Method 537 and 537.1					
Method 537 Modified					
EPA Method 533					
ASTM D7968-17a	X	X			
ASTM, D7979-20					

PFAS Identifiable by Each Testing Method					
	Total	Perfluoro-alkyl sulfonic and carboxylic acids	Fluorotelomer sulfonic acids	Fluorotelomer carboxylic acids	Perfluoro-octane sulfonamides
EPA Draft Method 1663	40	X	X	X	X
EPA 8327	40	X	X		X
EPA Method 537.1	24	X	X		
Method 537 Modified	18-50	X	X	X	
EPA Method 533	25	X	X		
ASTM D7968-17a and D7979-20	21	X	X	X	
PFAS Identifiable by Each Testing Method					
	Total	Perfluoro-octane sulfonamido-acetic acids	Perfluoro-octane sulfonamide ethanols	Per- and poly-fluoroether carboxylic and sulfonic acids	Perfluoro-methoxy carboxylates
EPA Draft Method 1663	40	X	X	X	
EPA 8327	40	X			
EPA Method 537.1	24	X			
Method 537 Modified	18-50	X			
EPA Method 533	25				X
ASTM D7968-17a and D7979-20	21				

PFAS analytical forensic techniques and specific considerations for each approach are provided in the tables below. For more information, see ACRP Research Report 262, Section 2.4.6, Laboratory Analytical Testing Methods.

PFAS Forensic Techniques: Targeted Analysis	
Advantages	Limitations
Up to 80 PFAS compounds reported, and provides accurate data for trace levels of PFAS with Reporting Limits (RLs) of 1 - 2 ng/L	Only applicable to a limited number of compounds, namely individual PFAS where analytical standards exists
Standardized, so can be used for risk assessments and is often part of routine site investigations	
Less expensive than other techniques	

PFAS Forensic Techniques: Total Oxidizable Precursors (TOP)	
Advantages	Limitations
Method may predict how PFAS chemical signatures may change due to precursor transformations	Only applicable to detectable PFAS, so may be potentially missing other PFAS
Good sensitivity with reporting limits (RLs) between 1 - 5 ng/L.	Analysis is dependent on laboratory conditions, and incomplete transformations may happen
Both site-specific and literature data may be used	Cannot be used for mass balance calculations
Provides insights specific to current risk drivers	Expensive with longer turnaround times for processing and analysis

PFAS Forensic Techniques: Total Organic Fluorine (TOF)	
Advantages	Limitations
Predicts the magnitude of PFAS problem and of expected changes in PFAS signatures due to environmental transformations of precursors	High current reporting limits: 600 ng/L (total F) in water 200-700 ng/g (total F) in soil
Provides a proxy for the entire class of PFAS present in a sample	Non-selective analysis
Can be used to test and confirm the lack of any PFAS in F3	May be subject to certain interferences
Data may be used for mass balance calculations	Lower recoveries observed for high organic content soils

PFAS Forensic Techniques: Non-Target Analysis	
Advantages	Limitations
Provides unique PFAS signature compounds	Provides new PFAS structures with unknown environmental behaviors including fate and transport
Has the ability to identify unknown PFAS with high specificity	Provides new PFAS structures with unknown environmental behaviors including fate and transport
Even when unknown PFAS are not identified, the resulting fingerprints may be compared between samples and with suspected sources	
Provides reliable results for quantification of identified PFAS that are lacking standards	

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