

PFAS Testing

Detecting a Rapidly Emerging Contaminant

*Advanced PFAS analysis of Water,
Soil, Sediment, Biota & Food Matrices*



Symbio
LABORATORIES
Environmental



What is PFAS?

Per- & Poly-fluoroalkyl substances (PFAS) comprise a family of over 5,000 fluorinated organic compounds with unique and complex properties. Many of these substances are considered to be persistent organic pollutants (POPs) and have yet to be extensively regulated and tested.

Existing Limitations with PFAS Analysis

Commonly used Low Resolution Mass Spectrometry, e.g. Triple quadrupole LC/MS/MS, are hampered by technological limitations, particularly in relation to lack of confirmatory requirements for short chain/ultra-short chain PFAS and inability to capture non-targeted/unknown PFAS compounds.

Take your PFAS analysis to the next level with Symbio Laboratories

Advanced Technology - High Resolution Mass Spectrometry

With advances in development of modern mass spectrometry, a new analytical technique based on High Resolution Mass Spectrometry (HRMS) offers a more advanced detection technique, providing superior analyte detection and confirmation in comparison to the existing LC/MS/MS methodology.

At Symbio Laboratories, all PFAS samples are analysed using HRMS. New generation HRMS measures mass with a higher accuracy, enabling the detection of mass differences down to the fifth decimal place in m/z between two compounds which, in some cases, would appear to be identical on a regular LC/MS/MS system.

An example of the mass variation between HRMS and LC/MS/MS techniques:

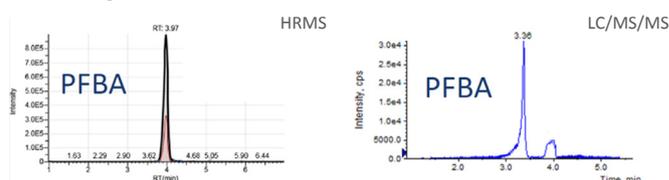
Element	HRMS		LC/MS/MS	
	Accurate Mass	Mass Resolution	Nominal Mass	Mass Resolution
¹⁹ F	18.9984	0.00001-0.0001	19	0.5-1
¹ H	1.00782	0.00001-0.0001	1	0.5-1
³² S	31.97207	0.00001-0.0001	32	0.5-1
¹⁶ O	15.99491	0.00001-0.0001	16	0.5-1

In addition, while LC/MS/MS provides only one fragment mass when confronted with short chain PFAS, HRMS offers both precursor accurate mass and fragment accurate mass for each PFAS compound, assuring confident confirmation and accurate quantitation.

Improved Accuracy & Precision

In addition to our advanced instrumentation and NATA accreditation on all matrices, Symbio also utilises isotope dilution (28 isotopically labelled PFAS analytes) for accurate quantitation.

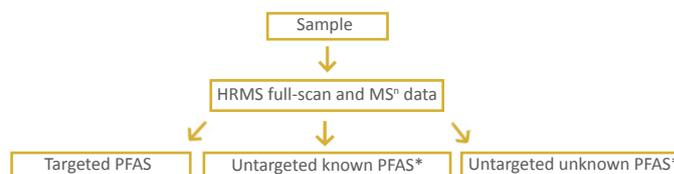
Accurate mass variation between HRMS and LC/MS/MS chromatograms for PFBA:



	HRMS	LC/MS/MS
Quantitation ion (m/z)	168.98937	169
Confirmation ion (m/z)	212.97920	Not Available
Confirmation Compliant?	Yes	No

Untargeted known PFAS and unknown PFAS compounds also represent a significant source of uncertainty for environmental assessment. With HRMS's fingerprinting capability, Symbio can qualify/semi-quantify previously untargeted compounds by post acquisition interrogation without the need for sample resubmission.

HRMS workflow for PFAS determination:



* Availability is subject to sample matrix and detection level

Faster Results

Utilising fast turnarounds and extensive instrument redundancy in our state-of-the-art facilities, Symbio can ensure timely and cost-effective reporting to meet a range of project plans.

With the high resolving power and unrivalled mass accuracy Symbio obtains using our HRMS system, and our ongoing method development and inclusion of additional PFAS compounds to meet industry and regulatory requirements, feel confident with Symbio's identification and quantitation of trace level compounds in a variety of complex matrices.