Quest Diagnostics®

Providing insights into the potential health risks associated with **forever chemicals**

Per- and Poly- fluorinated Alkyl Substances **(PFAS) Blood Testing**

The widespread problem of forever chemicals

Per- and poly- fluorinated alkyl substances (PFAS) are man-made chemicals that have been used in industry and consumer products since the 1940s.

One report reviewed by the Centers for Disease Control and Prevention, using data from the National Health and Nutrition Examination Survey (NHANES), found **PFAS in the blood of 97% of Americans**[1]

Commonly referred to as "forever chemicals," PFAS do not break down easily in the environment. While the science around the potential health impacts of PFAS exposure is still emerging, evidence suggests that high PFAS exposure is associated with certain health conditions.

People are most likely exposed to these chemicals by consuming PFAS-contaminated water or food, using products made with PFAS, or breathing contaminated air.

45%

Various studies and reports have found PFAS in 45% of US tap water[2]

While exposure is widespread and variable by geography and occupation, most people have some PFAS exposure due to their use in:

- **Nonstick cookware**
- **Water-repellent clothing**
- **Stain-resistant fabrics and carpets**
- **Some cosmetics**
- **Industrial agents, like firefighting foams**

The risks of forever chemicals

Elevated levels of PFAS may be associated with increased risk to certain health conditions reported in individuals with high levels of industrial or environmental exposure.[1]

In persons with high levels of exposure, the National Academies of Sciences, Engineering, and Medicine (NASEM) has reported **sufficient**[a] evidence of a link between PFAS exposure and numerous health problems[1] including:

- Decreased response in immune system
- Higher than normal lipid levels (dyslipidemia)
- Decreased growth in unborn babies and infants
- Increased risk of kidney cancer in adults

Certain groups of people may be at higher risk of health impacts from elevated PFAS levels, including those who[1]:

- May have been exposed on the job, such as firefighters
- Uses a water supply near a commercial or industrial location, including airports, military bases, manufacturing plants, or sewage plants
- Lives near a facility that manufactures fluorochemicals
- Lives near areas of documented PFAS environmental contamination

In January 2024, the CDC provided new information on its website that recognizes the value of PFAS blood testing by a CLIA-certified laboratory.[3]

As a result, people who may have been exposed to high levels of PFAS may seek testing to learn more about their exposure.

Using a PFAS blood test to detect risks

What the results from a PFAS blood test can tell you:

- Levels of certain PFAS chemicals in a person's blood at the time of the test
- An indication of how much PFAS has entered your patients body over time as measured from an initial baseline test

Results can help inform conversations about risk factors for associated health outcomes, as well as how to reduce PFAS exposure.

For patients who have elevated PFAS levels, the test can provide a valuable way to monitor levels as part of ongoing treatment.

What a PFAS blood test won't tell you:

- The source of PFAS in your patient's body or how long they've been exposed. PFAS can come from many different sources including drinking water, food, and consumer products. Nearly everyone has some measurable amount of PFAS in their blood.
- Whether any health conditions your patients may be experiencing were caused by PFAS exposure or definitively predict whether they are likely to develop certain health problems in the future.

This test is not appropriate for forensic use.

[a] NASEM defines evidence of an association between a health outcome and PFAS as "sufficient" (chance or bias unlikely to explain the association) if confidence is strong.

PFAS 9 Panel testing

Test details

The PFAS 9 Panel includes the individual and combined levels of 9 PFAS analytes in individual's serum, based on those that have been associated with certain health risks, per NASEM recommendations.

The report includes a summation of total PFAS levels at the time of the blood sample collection, as well as the Health Risk assessment values (per NASEM) and the US population median data.

This test does not identify the sources of a person's exposure or predict future health outcomes.

PFAS analytes tested	
MeFOSAA	Methylperfluorooctane sulfonamidoacetic acid
PFHxS	Perfluorohexanesulfonic acid
Linear PFOA	Perfluorooctanoic acid (n-PFOA)
Branched PFOA	Perfluorooctanoic acid isomers (Sb-PFOA)
PFDA	Perfluorodecanoic acid
PFUnDA	Perfluoroundecanoic acid
Linear PFOS	Perfluorooctane sulfonic acid (n-PFOS)
Branched PFOS	Perfluoromethylheptane sulfonic acid isomers (Sm-PFOS)
PFNA	Perfluorononanoic acid

Panel components cannot be ordered separately.

For individuals with elevated PFAS, Quest offers these follow-up tests:

- Lipid Panel, Standard (test code 7600) to assess dyslipidemia
- TSH (test code 899) to assess thyroid function
- Urinalysis, Macroscopic (test code 6448) to assess kidney disease

PFAS (Forever Chemicals) 9 Panel	
Test ordering	Please send inquiries to: **PFASTesting@questdiagnostics.com**
Method	Liquid chromatography-tandem mass spectrometry
Specimen requirements[b]	Preferred: 2 mL room temperature serum in a red-top tube with no additives (1 mL minimum)
Collection requirements	Standard blood collection, fasting not required
Turnaround time	10 days
Clinical use[c]	Evaluate exposure to per- and poly- fluorinated alkyl substances (PFAS) by detecting PFAS in blood circulation
Individuals suitable for testing	Individuals with a history of exposure to PFAS through their environment or occupation

[b]Specimen collection devices coated with PTFE/Teflon® and PVDF should be avoided because of potential contamination.

[c]This PFAS test is not intended for use in the diagnosis of any disease or other conditions, or for use in the cure, mitigation, or treatment of any disease or condition. Only a physician can diagnose a health condition or outcome. This test is not appropriate for forensic use.

Guidance on PFAS exposure, testing, and clinical follow-up[1]

PFAS exposure levels	
<2 (ng/ml) PFAS[e]	Provide standard of care
2≤20 (ng/ml) PFAS[e]	Encourage PFAS exposure reduction if a source has been identified, especially for pregnant persons. Within the usual standard of care, clinicians should: • Prioritize screening for dyslipidemia with a lipid panel (once between 9 and 11 years of age, and once every 4-6 years over age 20) as recommended by the American Academy of Pediatrics (AAP) and American Heart Association (AHA) • Screen for hypertensive disorders of pregnancy at all prenatal visits per the American College of Obstetricians and Gynecologists (ACOG) • Screen for breast cancer based on clinical practice guidelines based on age and other risk factors such as those recommended by the U.S. Preventive Services Task Force (USPSTF)
>20 (ng/ml) PFAS[e]	Consider PFAS exposure reduction if a source of exposure is identified, especially for pregnant persons. In addition to the usual standard of care, clinicians should: • Prioritize screening for dyslipidemia with a lipid panel (for patients over age 2) following American Academy of Pediatrics (AAP) recommendations for high-risk children and American Heart Association (AHA) guidance for high-risk adults At all well-visits: • Conduct thyroid function testing (for patients over age 18) with serum thyroid stimulating hormone (TSH) • Assess for signs and symptoms of kidney cancer (for patients over age 45), including with urinalysis • For patients over age 15, assess for signs and symptoms of testicular cancer and ulcerative colitis

[e]Simple additive sum of MeFOSAA, PFHxS, PFOA (linear and branched isomers), PFDA, PFUnDA, PFOS (linear and branched isomers), and PFNA in serum or plasma.

More than a lab — a committed partner

Quest Diagnostics is there with innovative solutions, services, and resources to help you meet your goals, stay ahead of the curve, and continue to deliver quality care.

- **Advanced diagnostics expertise,** with a comprehensive test menu
- **Data, technology, and programs** to support and evaluate population health strategies
- **Multiple, proven lab relationship strategies**

To learn more about PFAS testing from Quest Diagnostics, please email our team directly at **PFASTesting@questdiagnostics.com** or contact your sales representative

References

1. National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Division on Earth and Life Studies; Board on Population Health and Public Health Practice; Board on Environmental Studies and Toxicology; Committee on the Guidance on PFAS Testing and Health Outcomes. Guidance on PFAS Exposure, Testing, and Clinical Follow-Up. National Academies Press (US); 2022. doi:10.17226/26156
2. Smalling KL, Romanok KM, Bradley PM, et al. Per- and poly- fluorinated substances (PFAS) in United States tapwater: Comparison of underserved private-well and public-supply exposures and associated health implications. *Environ Int*. 2023;178:108033. doi:10.1016/j.envint.2023.108033
3. PFAS Information for Clinicians. Center for Disease Control and Prevention. Reviewed January 18, 2024.Accessed January 19, 2024. https://www.atsdr.cdc.gov/pfas/resources/pfas-information-for-clinicians.html

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