



## Water Test Kit Report

Prepared For  
Pat Elder

PURIFICATION TECHNOLOGY  
WITH A PLAN FOR TOMORROW.

November 17, 2021

## Cyclopure Water Test Kit Pro for PFAS

### Part 1: PFAS Analytical Method

We developed the PFAS test kit using DEXSORB under a grant from NIEHS. The idea was to provide a convenient, affordable and accurate kit for PFAS. NIEHS has listed the kit under its [SBIR STTR Sensor Technology for the 21st Century](#).

**DEXSORB Passive Sampling:** Testing is done by passive sampling using a DEXSORB loaded extraction disc in a 250 mL collection cup. We do all analytics in-house at our labs on Thermo QExactive LC-MS/MS. We quantify measurements to 1-2ppt for all PFAS compounds.



**PFAS Analysis:** At the lab, we use isotope dilution methods for the measurement of PFAS on LC-MS/MS. The analysis of drinking water samples is validated to the requirements of EPA Methods 537 and 533. The analysis of other matrices like groundwater, surface water, wastewater and landfill leachate follow the criteria of the newly released EPA 1633 draft. All methods follow instrument procedures for internal standardization and calibration certification.

**Used by Research Institutions:** To date, we have tested and reported on over 700 water samples in 33 States across the U.S. The water test kit is also being used in environmental testing projects by several research institutions, including the University of Florida, University of Cincinnati, University of Rhode Island and the University of Queensland (Australia).

Our test kit measures the following perfluorinated compounds in drinking water:

Compound	Abbreviation	CAS#
Perfluorobutanoic Acid	PFBA	375-22-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluorotridecanoic Acid	PFTTrDA	72629-94-8
Perfluorotetradecanoic Acid	PFTeA	376-06-7
Perfluorobutane Sulfonic Acid	PFBS	375-73-5
Perfluorohexane Sulfonic Acid	PFHxS	355-46-4
Perfluorooctane Sulfonic Acid	PFOS	1763-23-1
Hexafluoropropylene Oxide Dimer Acid (GenX)	HFPO-DA	13252-13-6
N-Ethyl Perfluorooctane Sulfonamido Acetic Acid	N-EtFOSAA	2991-50-6
N-Methyl Perfluorooctane Sulfonamido Acetic Acid	N-MeFOSAA	2355-31-9

## Part 2: PFAS Report

Below in Appendix A are results for the 13 test kits sampled with unfiltered water from New York, Maine, New Hampshire, Vermont, Massachusetts, and Maryland:

### Unfiltered Water Samples -

- Kit# 663 - Newburgh, NY (Lake Washington)
- Kit# 666 - Kittery, ME (Piscataqua River)
- Kit# 667 - Portsmouth, NH (Prescott Park Piscataqua River)
- Kit# 670 - Brunswick, ME (Stream Near Mere Creek)
- Kit# 671 - Bath, ME (Kennebec River)
- Kit# 675 - Newport, VT (Sewage Pipe Main St. Lake Rd.)
- Kit# 676 - Newport, VT (Gardner Park)
- Kit# 677 - Bath, ME (Kennebec River South End Park)
- Kit# 668 - East Falmouth, MA (John's Pond)
- Kit# 669 - Brunswick, ME (Androscoggin River)
- Kit# 672 - East Falmouth (Ashumet Pond)
- Kit# 673 - Annapolis, MD (Naval Weapons Facility)
- Kit# 674 - Fort Meade, MD (Little Patuxent River at Fort George G. Meade)

The results are as varied as the locations. Four reports returned non-detect (##667, 670, 675, and 676), including samples taken from New Hampshire and Vermont.

The New York sample returned an overall PFAS measurement of 20.9 ppt, but came within State limits for PFOA (3.6 ppt) and PFOS (7.5 ppt).

The five samples returned from Maine were mild, except for the Androscoggin sample which measured a total of 183.1 ppt for 21 PFAS, including 51.1 ppt for PFOS.

The two samples from Massachusetts both returned high levels of PFAS (184.2 ppt and 269.2 ppt), with PFHxS, PFOA and PFOS accounting for the majority of the detection.

The Maryland samples returned the highest levels of PFAS, with an extremely elevated level of 1,249.8 ppt for PFOS alone in the Little Patuxent River at Fort George G. Meade sample.

## Appendix A - Long Form Reports

Kit#s 663, 666, 667, 670 and 671

WTK_ID	WTK_PFAS_663	WTK_PFAS_666	WTK_PFAS_667	WTK_PFAS_670	WTK_PFAS_671
Name	Pat Elder	Pat Elder	Pat Elder	Pat Elder	Pat Elder
Sampling Location	Newburgh, NY 12550 (Lake Washington)	Kittery, ME 03854 (Piscataqua River)	Portsmouth, NH 03801 (Prescott Park Piscataqua River)	Brunswick, ME 04011 (stream near Mere Creek)	Bath, ME 04530 (WWTP Kennebec River)
Filtration Status	Unfiltered	Unfiltered	Unfiltered	Unfiltered	Unfiltered
Sampling Date	10/25/21 7:30 AM	10/28/21 2:00 PM	10/25/21 1:00 PM	10/28/21 11:30 AM	10/26/21 10:00 AM
Order ID	3645	3645	3645	3645	3645
GenX	< 5 ng/L	< 5 ng/L	< 5 ng/L	< 5 ng/L	< 5 ng/L
N-EtFOSAA	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L
N-MeFOSAA	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFBA	2.2	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFBS	1.6	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFDA	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFDoA	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFHpA	1.3	< 1 ng/L	< 1 ng/L	< 1 ng/L	1.2
PFHxA	2.1	< 1 ng/L	< 1 ng/L	< 1 ng/L	1.2
PFHxS	2.6	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFNA	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFOA	3.6	1.4	< 1 ng/L	< 1 ng/L	2.3
PFOS	7.5	2.2	< 1 ng/L	< 1 ng/L	2.5
PFPeA	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFTeA	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFTTrDA	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFUnA	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L
<b>Total PFAS (17 Compounds)</b>	<b>20.9</b>	<b>3.6</b>	<b>0</b>	<b>0</b>	<b>7.2</b>

Kit#s 675, 676, and 677

WTK_ID	WTK_PFAS_675	WTK_PFAS_676	WTK_PFAS_677
Name	Pat Elder	Pat Elder	Pat Elder
Sampling Location	Newport, VT 05855 (Sewage Pipe Main St. Lake Rd.)	Newport, VT 05855 (Gardner Park)	Bath, ME 04530 (Kennebec River South End Park)
Filtration Status	Unfiltered	Unfiltered	Unfiltered
Sampling Date	10/27/21 10:00 AM	10/27/21 10:30 AM	10/28/21 9:30 AM
Order ID	3645	3645	3645
GenX	< 5 ng/L	< 5 ng/L	< 5 ng/L
N-EtFOSAA	< 1 ng/L	< 1 ng/L	< 1 ng/L
N-MeFOSAA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFBA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFBS	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFDA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFDoA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFHpA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFHxA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFHxS	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFNA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFOA	< 1 ng/L	< 1 ng/L	1.8
PFOS	< 1 ng/L	< 1 ng/L	1.9
PFPeA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFTeA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFTrDA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFUnA	< 1 ng/L	< 1 ng/L	< 1 ng/L
<b>Total PFAS (17 Compounds)</b>	<b>0</b>	<b>0</b>	<b>3.7</b>

Kit#s 668, 669, 672, 673 and 674

WTK_ID	WTK_PFAS_668	WTK_PFAS_669	WTK_PFAS_672	WTK_PFAS_673	WTK_PFAS_674
Name	Pat Elder	Pat Elder	Pat Elder	Pat Elder	Pat Elder
Sampling Location	East Falmouth, MA 02536 (John's Pond)	Brunswick, ME 04011 (Androscoggin River)	East Falmouth, MA 02536 (Ashumet Pond)	Annapolis, MD 21409 (Naval Weapons Facility)	Fort Meade, MD 20755 (Little Patuxent River at Fort George G. Meade)
Filtration Status	Unfiltered	Unfiltered	Unfiltered	Unfiltered	Unfiltered
Sampling Date	10/29/21 8:00 AM	10/28/21 11:00 AM	10/29/21 7:30 AM	11/4/21 1:00 PM	11/4/21 11:30 AM
Order ID	3645	3645	3645	3645	3645
GenX	< 5 ng/L	< 5 ng/L	< 5 ng/L	< 5 ng/L	< 5 ng/L
N-EtFOSAA	< 1 ng/L	8.5	< 1 ng/L	< 1 ng/L	53.5
N-MeFOSAA	< 1 ng/L	19.7	< 1 ng/L	< 1 ng/L	160.6
PFBA	3.9	1.4	5.1	3	1.6
PFBS	2.6	1	3.4	5.2	< 1 ng/L
PFDA	< 1 ng/L	3	1.7	< 1 ng/L	188.9
PFDoA	< 1 ng/L	< 1 ng/L	1.3	< 1 ng/L	9
PFHpA	6.2	1.7	6.7	8.3	1.9
PFHxA	13.4	6.6	13.6	24.5	21.7
PFHxS	50.7	3.4	40.6	228.6	4.2
PFNA	2.9	1.1	21.5	21.2	84.5
PFOA	20.5	5.4	18.1	40.4	29.7
PFOS	61.9	51.1	130	84.5	1249.8
PFPeA	8.6	3.4	8.7	3.7	3.1
PFTeA	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFTrDA	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFUnA	< 1 ng/L	< 1 ng/L	5.3	1.5	30.7
<b>Total PFAS (17 Compounds)</b>	<b>170.7</b>	<b>106.3</b>	<b>256</b>	<b>396.4</b>	<b>2118.7</b>
Additional PFAS					
5:3 FTA	< 1 ng/L	3.2	< 1 ng/L	< 1 ng/L	< 1 ng/L
7:3 FTA	< 1 ng/L	< 1 ng/L	< 1 ng/L	< 1 ng/L	2
6:2 FTS	1.6	18.4	1.6	2.4	2.5
8:2 FTS	< 1 ng/L	3.2	< 1 ng/L	< 1 ng/L	33.1
FBSA	4.3	< 1 ng/L	1.8	3.1	< 1 ng/L
FHxSA	2	< 2	< 2	18.1	< 2
PFOSA	< 1 ng/L	5.9	< 1 ng/L	1	28.7
PFPrS	< 1 ng/L	< 1 ng/L	< 1 ng/L	1.3	< 1 ng/L
PFPeS	4.1	< 1 ng/L	3.6	6.2	< 1 ng/L
PFHpS	1.5	< 1 ng/L	1.1	4.8	6.5
PFNS	< 1 ng/L	< 1 ng/L	3.6	< 1 ng/L	6.9
PFDS	< 1 ng/L	< 1 ng/L	1.5	< 1 ng/L	19.1
PFECHS	< 1 ng/L	< 1 ng/L	< 1 ng/L	1.2	3.1
FOSAA	< 1 ng/L	1.9	< 1 ng/L	< 1 ng/L	8.8
NMeFOSE	< 1 ng/L	2.3	< 1 ng/L	< 1 ng/L	2.3
PFOPA	< 5 ng/L	< 5 ng/L	< 5 ng/L	< 5 ng/L	5.8
6:2diPAP	< 1 ng/L	39.4	< 1 ng/L	< 1 ng/L	5.2
6:6PFPi	< 1 ng/L	1.4	< 1 ng/L	< 1 ng/L	61.6
N-AP-FHxSA	< 1 ng/L	1.1	< 1 ng/L	< 1 ng/L	1.9
<b>Total PFAS (All Detected)</b>	<b>184.2</b>	<b>183.1</b>	<b>269.2</b>	<b>434.5</b>	<b>2306.2</b>