



Water Test Kit Report

Prepared For
Pat Elder

Kit Nos. – 963, 964, 965, 966, 967, 968

PURIFICATION TECHNOLOGY
WITH A PLAN FOR TOMORROW.

March 11, 2022

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 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 with a DEXSORB loaded extraction disc in a 250 mL collection cup. We do all analytics in-house at our labs on LC-MS/MS. We quantify measurements to 1-2ppt for 55 PFAS compounds. See Appendix.

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: We have tested and reported on over 1,000 water samples in 41 States across the U.S. The water test kit is also being used for environmental testing by leading research institutions, like University of Florida and University of Queensland (Australia).

Part 2: PFAS Report

This report is for 6 kits that were sampled with unfiltered water from various locations around North Carolina and South Carolina. Kit numbers and sample locations are noted below.



You can view your results in the attached images of your raw data reports. Dashboard views can be accessed by clicking the Kit# links below. Type “**cyclo2021**” for password.

Kit# 963 (Seymour Johnson AFB NC – Neuse Bridge #1):

We detected 7 PFAS in this **unfiltered water sample**, with a total concentration of 19.0 ppt: PFOA – 3.1 ppt; PFOS – 6.7 ppt; PFBS – 2.0 ppt; PFHxA – 2.1 ppt; PFHxS – 2.9 ppt; PFPeA – 1.2 ppt; and 6:2 FTS - 1.0 ppt. The other 48 PFAS tested for measured non-detect.

Kit# 964 (Fayetteville NC - Lake Manchester #2):

We detected 7 PFAS in this **unfiltered water sample**, with a total concentration of 24.4 ppt: PFOA – 1.6 ppt; PFOS – 10.7 ppt; PFBS – 1.2 ppt; PFHxA – 1.8 ppt; PFHxS – 6.6 ppt; PFPeA – 1.1 ppt; and 6:2 FTS - 1.4 ppt. The other 48 PFAS measured non-detect.

Kit# 965 (Charleston SC - Creek Under 642):

We detected 21 PFAS in this **unfiltered water sample**, with a total concentration of 2,997.6 ppt: PFOA - 121.1 ppt; PFOS - 809.5 ppt; PFBA - 19.5 ppt; PFBS - 123.0 ppt; PFDA - 1.1 ppt; PFHxA - 198.9 ppt; PFHxS – 804.4 ppt; PFNA - 11.5 ppt; PFHpA - 70.1 ppt; PFPeA - 116.0 ppt; 4:2 FTS - 2.1 ppt; 5:3 FTA - 2.2 ppt; 6:2 FTS - 372.0; 8:2 FTS - 13.2 ppt; FBSA - 29.9 ppt; FHxSA - 133.1 ppt; PFECHS - 10.2 ppt; PFNS - 1.5 ppt; PFOSA - 3.7 ppt; PFPeS -133.0 ppt; and PFPrS - 21.6 ppt. The other 34 PFAS tested for measured non-detect.

Kit# 966 (Seymour Johnson AFB NC – Neuse Bridge #2):

We detected 10 PFAS in this **unfiltered water sample**, with a total concentration of 132.6 ppt: PFOA – 2.9 ppt; PFOS – 1.8 ppt; PFBA - 5.2 ppt; PFBS – 1.2 ppt; PFHxA – 32.5 ppt; PFHxS – 1.9 ppt; PFHpA – 13.1 ppt; PFPeA – 37.1 ppt; 6:2 FTS - 27.3 ppt; and PFECHS - 9.6 ppt. The other 45 PFAS measured non-detect.

Kit# 967 (Myrtle Beach SC - Victory Lane):

We detected 11 PFAS in this **unfiltered water sample**, with a total concentration of 45.8 ppt: PFOA – 2.8 ppt; PFOS – 23.6 ppt; PFBS – 1.6 ppt; PFDA - 4.3 ppt; PFDoA - 1.7 ppt; PFHxA – 2.9 ppt; PFHxS – 2.7 ppt; PFNA - 2.5 ppt; PFHpA - 1.1 ppt; PFPeA – 1.0 ppt; and PFUnA - 1.6 ppt. The other 44 PFAS measured non-detect.

Kit# 968 (Myrtle Beach SC - Creek Behind Aero Club @ King's Highway):

We detected 16 PFAS in this **unfiltered water sample**, with a total concentration of 678.8 ppt: PFOA – 34.0 ppt; PFOS – 229.2 ppt; PFBA – 2.7 ppt; PFBS – 16.2 ppt; PFHxA – 34.9 ppt; PFHxS – 217.6 ppt; PFNA – 4.9 ppt; PFHpA – 13.4 ppt; PFPeA – 13.5 ppt; 6:2 FTS - 13.4 ppt; 8:2 FTS - 2.4 ppt; FBSA - 9.2 ppt; FHxSA - 60.2 ppt; PFECHS - 2.2 ppt; PFPeS – 22.4 ppt; and PFPrS – 2.6 ppt. The other 39 PFAS tested for measured non-detect.

PFAS Regulations. Neither North Carolina nor South Carolina have established their own set of Maximum Contaminant Limits (MCLs) for PFAS at this time, and each State follows the EPA Health Advisory Level (HAL) of 70ppt for combination of PFOA and PFOS.

Part 3: Raw Data View

WTK_ID	WTK_PFAS_963	WTK_PFAS_964	WTK_PFAS_965
first_name	Pat Elder	Pat Elder	Pat Elder
testing_location	Seymour Johnson AFB, NC Neuse River Bridge #1	Fayetteville, NC 28310 Lake Manchester #2	Charleston, SC 29418 Creek under 642
sample_taken_from	Unfiltered	Unfiltered	Unfiltered
date_of_testing	2/17/22 10:45 AM	2/17/22 12:30 PM	2/18/22 12:30 PM
Order ID	4201	4201	4201
GenX	< 2 ng/L	< 2 ng/L	< 2 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	19.5
PFBS	2	1.2	123
PFDA	< 1 ng/L	< 1 ng/L	1.1
PFDoA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFHpA	< 1 ng/L	< 1 ng/L	70.1
PFHxA	2.1	1.8	198.9
PFHxS	2.9	6.6	804.4
PFNA	< 1 ng/L	< 1 ng/L	11.5
PFOA	3.1	1.6	121.1
PFOS	6.7	10.7	809.5
PFPeA	1.2	1.1	116
PFTeA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFTTrDA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFUnA	0	0	0
Total PFAS (17 Compounds)	18	23	2275.1
Additional PFAS			
4:2 FTS	< 1 ng/L	< 1 ng/L	2.1
5:3 FTA	< 1 ng/L	< 1 ng/L	2.2
6:2 FTS	1	1.4	372
6:2diPAP	< 1 ng/L	< 1 ng/L	< 1 ng/L
8:2 FTS	< 1 ng/L	< 1 ng/L	13.2
FBSA	< 1 ng/L	< 1 ng/L	29.9
FHxSA	< 2 ng/L	< 2 ng/L	133.1
PFECHS	< 1 ng/L	< 1 ng/L	10.2
PFNS	< 1 ng/L	< 1 ng/L	1.5
PFOSA	< 1 ng/L	< 1 ng/L	3.7
PFPeS	< 1 ng/L	< 1 ng/L	133
PFPrS	< 1 ng/L	< 1 ng/L	21.6
Total PFAS (All Detected)	19	24.4	2997.6

WTK_ID	WTK_PFA5_966	WTK_PFA5_967	WTK_PFA5_968
first_name	Pat Elder	Pat Elder	Pat Elder
testing_location	Seymour Johnson AFB, NC Neuse River Bridge #2	Myrtle Beach, SC 29577 3201 Victory Lane	Myrtle Beach, SC 29577 Creek Aero Club, Kings Hwy
sample_taken_from	Unfiltered	Unfiltered	Unfiltered
date_of_testing	2/17/22 11:30 AM	2/18/22 10:45 AM	2/18/22 9:40 AM
Order ID	4201	4201	4201
GenX	< 2 ng/L	< 2 ng/L	< 2 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	5.2	< 1 ng/L	2.7
PFBS	1.2	1.6	16.2
PFDA	< 1 ng/L	4.3	< 1 ng/L
PFDoA	< 1 ng/L	1.7	< 1 ng/L
PFHpA	13.1	1.1	13.4
PFHxA	32.5	2.9	34.9
PFHxS	1.9	2.7	217.6
PFNA	< 1 ng/L	2.5	4.9
PFOA	2.9	2.8	34
PFOS	1.8	23.6	229.2
PFPeA	37.1	1	13.5
PFTeA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFTrDA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFUnA	0	1.6	< 1 ng/L
Total PFAS (17 Compounds)	95.7	45.8	566.4
Additional PFAS			
4:2 FTS	< 1 ng/L	< 1 ng/L	< 1 ng/L
5:3 FTA	< 1 ng/L	< 1 ng/L	< 1 ng/L
6:2 FTS	27.3	< 1 ng/L	13.4
6:2diPAP	< 1 ng/L	< 1 ng/L	< 1 ng/L
8:2 FTS	< 1 ng/L	< 1 ng/L	2.4
FBSA	< 1 ng/L	< 1 ng/L	9.2
FHxSA	< 2 ng/L	< 2 ng/L	60.2
PFECHS	9.6	< 1 ng/L	2.2
PFNS	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFOSA	< 1 ng/L	< 1 ng/L	< 1 ng/L
PFPeS	< 1 ng/L	< 1 ng/L	22.4
PFPrS	< 1 ng/L	< 1 ng/L	2.6
Total PFAS (All Detected)	132.6	45.8	678.8

Appendix.

PFAS detected by Cyclopure analytical methods.

Compound	Abbreviation	CAS#	EPA 1633
Perfluorobutanoic Acid	PFBA	375-22-4	Y
Perfluoropentanoic Acid	PFPeA	2706-90-3	Y
Perfluorohexanoic Acid	PFHxA	307-24-4	Y
Perfluoroheptanoic Acid	PFHpA	375-85-9	Y
Perfluorooctanoic Acid	PFOA	335-67-1	Y
Perfluorononanoic Acid	PFNA	375-95-1	Y
Perfluorodecanoic Acid	PFDA	335-76-2	Y
Perfluoroundecanoic Acid	PFUnA	2058-94-8	Y
Perfluorododecanoic Acid	PFDoA	307-55-1	Y
Perfluorotridecanoic Acid	PFTTrDA	72629-94-8	Y
Perfluorotetradecanoic Acid	PFTeA	376-06-7	Y
Perfluoropropane Sulfonic Acid	PFPrS	423-41-6	
Perfluorobutane Sulfonic Acid	PFBS	375-73-5	Y
Perfluoropentane Sulfonic Acid	PFPeS	2706-91-4	Y
Perfluorohexane Sulfonic Acid	PFHxS	355-46-4	Y
Perfluoroheptane Sulfonic Acid	PFHpS	375-92-8	Y
Perfluorooctane Sulfonic Acid	PFOS	1763-23-1	Y
Perfluorononane Sulfonic Acid	PFNS	474511-07-4	Y
Perfluorodecane Sulfonic Acid	PFDS	335-77-3	Y
Perfluorododecane Sulfonic Acid	PFDoS	79780-39-5	Y
4:2 Fluorotelomer Sulfonate	4:2 FTS	414911-30-1	Y
6:2 Fluorotelomer Sulfonate	6:2 FTS	425670-75-3	Y
8:2 Fluorotelomer Sulfonate	8:2 FTS	481071-78-7	Y
10:2 Fluorotelomer Sulfonate	10:2 FTS	120226-60-0	
Perfluorobutane Sulfonamide	FBSA	30334-69-1	
N-Methylperfluorobutanesulfonamide	MeFBSA	68298-12-4	
Perfluorohexane Sulfonamide	FHxSA	41997-13-1	
Perfluorooctane Sulfonamide	PFOSA	754-91-6	Y
Perfluorodecane Sulfonamide	FDSA	N/A	
N-Ethylperfluorooctane-1-Sulfonamide	NETFOSA	4151-50-2	Y
N-Methylperfluorooctane-1-Sulfonamide	NMeFOSA	31506-32-8	Y
Perfluorooctane Sulfonamido Acetic Acid	FOSAA	2806-24-8	
N-Ethyl Perfluorooctane Sulfonamido Acetic Acid	NETFOSAA	2991-50-6	Y
N-Methyl Perfluorooctane Sulfonamido Acetic Acid	NMeFOSAA	2355-31-9	Y
N-methyl perfluorooctanesulfonamidoethanol	NMeFOSE	24448-09-7	Y
N-ethyl perfluorooctanesulfonamidoethanol	NETFOSE	1691-99-2	Y
Hexafluoropropylene Oxide Dimer Acid	HFPO-DA	13252-13-6	Y
4,8-Dioxa-3H-Perfluorononanoate	ADONA	919005-14-4	Y
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1	Y
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5	Y
Perfluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6	Y
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1	Y
11-Chloroeicosafluoro-3-Oxanonane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9	Y
Perfluoro(2-ethoxyethane) Sulfonic acid	PFEESA	113507-82-7	Y
Perfluoro-4-ethylcyclohexane Sulfonic Acid	PFECHS	646-83-3	
8-Chloroperfluoro-1-Octanesulfonic Acid	8Cl-PFOS	777011-38-8	
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5	Y
2h,2h,3h,3h-Perfluorooctanoic Acid	5:3FTCA	914637-49-3	Y
3-Perfluoroheptyl propanoic acid	7:3FTCA	812-70-4	Y
2H-Perfluoro-2-dodecenoic acid	FDUEA	70887-94-4	
2H-perfluoro-2-decenoic acid	FOUEA	70887-84-2	
Bis(perfluorohexyl)phosphinic acid	6:6PFPI	40143-77-9	
(Heptadecafluorooctyl)(tridecafluorohexyl) Phosphinic Acid	6:8PFPI	610800-34-5	
Bis(perfluorooctyl)phosphinic acid	8:8PFPI	40143-79-1	
N-(3-dimethylaminopropan-1-yl) perfluoro-1-hexanesulfonamide	N-AP-FHxSA	50598-28-2	