

NC PFAST Quantitative Screening Results for Raw Drinking Water



BRUNSWICK COUNTY WATER SYSTEM (NC0410045), 2019-05-29

Disclaimer: The PFAS measurements reported here represent initial laboratory findings that have not been subjected to full validation and quality assurance/quality control procedures and should be considered preliminary.

As part of the North Carolina Per and Polyfluoroalkyl Substances Testing (PFAST) Network statewide sampling effort (ncpfastnetwork.com), a raw water sample collected from BRUNSWICK COUNTY WATER SYSTEM (NC0410045) on 2019-05-29 by the Ferguson Lab was analyzed for 47 PFAS chemicals by liquid chromatography-tandem mass spectrometry (LC-MS/MS). Concentrations of individual PFAS are reported in units of parts-per-trillion (ppt, i.e., nanogram of chemical per liter water).

PFAS compounds are not currently regulated as drinking water contaminants by the United States Environmental Protection Agency (US EPA) or the North Carolina Department of Environmental Quality (NC DEQ) and thus the measurements reported here are not intended to be used in enforcement actions. [The US EPA has established a lifetime health advisory level \(HAL\) of 70 ppt for combined perfluorooctanoic acid \(PFOA\) and perfluorooctane sulfonate \(PFOS\) in drinking water.](#) In addition, [the NC DHHS has established a provisional health goal based on risk assessment for GenX in drinking water of 140 ppt.](#) These advisory levels can serve as reference values when evaluating PFAS concentrations reported below for raw drinking water.

Reporting Limit (RL): This is the lowest concentration that can be confidently quantified in water samples for an individual PFAS chemical. This level is a function of instrument sensitivity, reproducibility, and precision. The RL typically (but not always) represents the lowest concentration point on the calibration curve, and it is always higher (often much higher) than the method detection limit (MDL) for a given PFAS analyte.

Sum of PFOS and PFOA

The sum of PFOA and PFOS was **19 ppt**. This represents 27.1% of the EPA HAL of 70 ppt for PFOA + PFOS.

GenX

The concentration of GenX was **28.1 ppt**. This represents 20.1% of the NC DHHS health goal for GenX.

Total PFAS

The total PFAS concentration was **395.4** ppt.

Summary of findings

Figure 1: Concentrations of individual PFAS compounds.

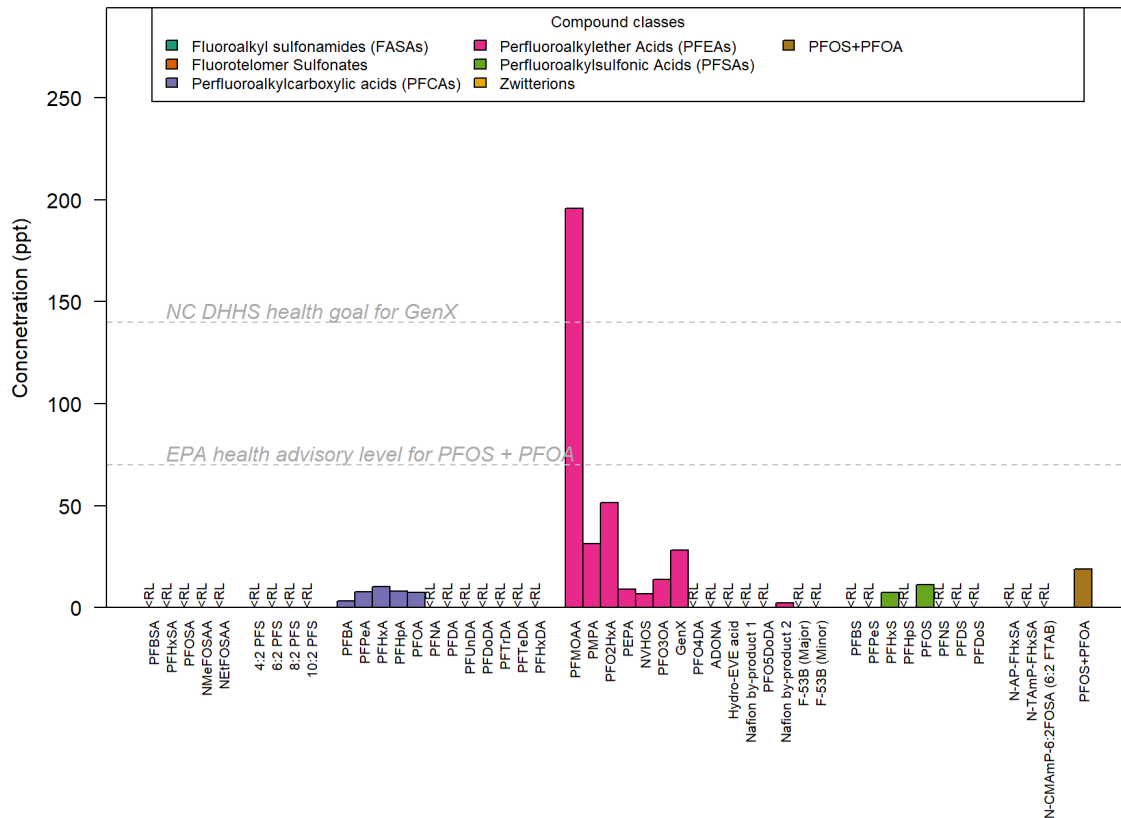


Table 1 Concentrations of PFAS compounds detected in parts-per-trillion (ppt). Gray values indicate compounds below the reporting limit (RL). Bold rows indicate occurrence in excess of the EPA Health Advisory Limit (HAL) for PFOS + PFOA of 70 ppt.

Analyte Name	Abbreviation	CAS Registry Number	Concentration (ppt)	RL (ppt)
Perfluorobutane sulfonamide	PFBSA	30334-69-1	<RL	1
Perfluorohexane sulfonamide	PFHxSA	41997-13-1	<RL	1

Analyte Name	Abbreviation	CAS Registry Number	Concentration (ppt)	RL (ppt)
Perfluorooctane sulfonamide	PFOSA	754-91-6	<RL	1
N-methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA	2355-31-9	<RL	1
N-ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6	<RL	5

Fluorotelomer Sulfonates

4:2 Fluorotelomer sulfonic acid	4:2 PFS	757124-72-4	<RL	1
6:2 Fluorotelomer sulfonic acid	6:2 PFS	27619-97-2	<RL	1
8:2 Fluorotelomer sulfonic acid	8:2 PFS	39108-34-4	<RL	1
10:2 Fluorotelomer sulfonic acid	10:2 PFS	120226-60-0	<RL	1

Perfluoroalkylcarboxylic acids (PFCAs)

Perfluorobutanoic acid	PFBA	375-22-4	3.5	1
Perfluoropentanoic acid	PFPeA	2706-90-3	7.9	2
Perfluorohexanoic acid	PFHxA	307-24-4	10.3	2
Perfluoroheptanoic acid	PFHpA	375-85-9	8.2	5
Perfluorooctanoic acid	PFOA	335-67-1	7.6	1
Perfluorononanoic acid	PFNA	375-95-1	<RL	1
Perfluorodecanoic acid	PFDA	335-76-2	<RL	1
Perfluoroundecanoic acid	PFUnDA	2058-94-8	<RL	1
Perfluorododecanoic acid	PFDoDA	307-55-1	<RL	1

Analyte Name	Abbreviation	CAS Registry Number	Concentration (ppt)	RL (ppt)
Perfluorotridecanoic acid	PFTTrDA	72629-94-8	<RL	2
Perfluorotetradecanoic acid	PFTTeDA	376-06-7	<RL	1
Perfluorohexadecanoic acid	PFHxDA	67905-19-5	<RL	10

Perfluoroalkylether Acids (PFEAs)

Perfluoro-2-methoxyacetic acid	PFMOAA	674-13-5	195.6	5
Perfluoro-2-methoxypropanoic acid	PMPA	377-73-1	31.3	1
Perfluoro(3,5-dioxahexanoic) acid	PFO2HxA	39492-88-1	51.4	1
Perfluoro-2-ethoxypropanoic acid	PEPA	267239-61-2	9.2	1
1,1,2,2-tetrafluoro-2-(1,2,2,2-tetrafluoroethoxy)ethane sulfonic acid	NVHOS	N/A	7	1
Perfluoro(3,5,7-trioxaoctanoic) acid	PFO3OA	39492-89-2	14	1
Perfluoro-2-propoxypropanoic acid	GenX	13252-13-6	28.1	1
Perfluoro(3,5,7,9-tetraoxadecanoic) acid	PFO4DA	39492-90-5	<RL	1
Dodecafluoro-3H-4,8-dioxanonanoic acid	ADONA	958445-44-8	<RL	1
Propanoic acid, 3-[1-[difluoro(1,2,2,2-tetrafluoroethoxy)methyl-1,2,2,2-tetrafluoroethoxy]-2,2,3,3-tetrafluoro-	Hydro-EVE acid	773804-62-9	<RL	1
Ethanesulfonic acid, 2-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-	Nafion by-product 1	29311-67-9	<RL	1

Analyte Name	Abbreviation	CAS Registry Number	Concentration (ppt)	RL (ppt)
Perfluoro(3,5,7,9,11-pentaoxadodecanoic) acid	PFO5DoDA	39492-91-6	<RL	2
Ethanesulfonic acid, 2-[1-[difluoro(1,2,2,2-tetrafluoroethoxy)methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-	Nafion by-product 2	749836-20-2	2.4	1
9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	F-53B (Major)	73606-19-6	<RL	1
11-chloroeicosafluoro-3-oxanonane-1-sulfonate	F-53B (Minor)	83329-89-9	<RL	1

Perfluoroalkylsulfonic Acids (PFSAs)

Perfluorobutanesulfonic acid	PFBS	375-73-5	<RL	1
Perfluoropentanesulfonic acid	PFPeS	2706-91-4	<RL	1
Perfluorohexanesulfonic acid	PFHxS	355-46-4	7.5	2
Perfluoroheptanesulfonic acid	PFHpS	375-92-8	<RL	1
Perfluorooctanesulfonic acid	PFOS	1763-23-1	11.4	1
Perfluorononanesulfonic acid	PFNS	68259-12-1	<RL	1
Perfluorodecanesulfonic acid	PFDS	2806-15-7	<RL	10
Perfluorododecanesulfonic acid	PFDoS	79780-39-5	<RL	10

Zwitterions

N-(3-dimethylaminopropan-1-yl)perfluoro-1-hexane-sulfonamide	N-AP-FHxSA	50598-28-2	<RL	5
N-[3-(perfluoro-1-hexanesulfonamido)propan-1-yl]-N,N,N-trimethylammonium	N-TAmP-FHxSA	38850-51-0	<RL	1
N-(carboxymethyl)-N,N-dimethyl-N-[3-(1H,1H,2H,2H-perfluoro-1-octanesulfonamido)propan-1-yl]ammonium	N-CMAmP-6:2FOSA (6:2 FTAB)	34455-29-3	<RL	2