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Based on samples taken by Dr. Detlef Knappe and others in August 2014, but not published until November 2016, levels of a Perfluoroalkyl Ether Carboxylic Acid (PFECA) known as GENX and similar PFECAs were found in the Cape Fear River and in drinking water produced by the Cape Fear Public Utility Authority. Average levels of GENX found in the Cape Fear River on August 14, 2014 were 631 nanograms per Liter (631 parts per trillion). The median value was 304 nanograms per Liter. Additional testing of Cape Fear Public Utilities water within the treatment process indicated that there was not significant removal of GENX during the treatment process. Dr. Knappe's team did not test the Brunswick County treated water supply at that time so there was no confirmation of GENX within Brunswick County's treated water. Although the treatment process at Brunswick County's Northwest Water Treatment Plant varies significantly from Cape Fear Public Utilities Sweeney Water Treatment Plant, it is generally thought that traditional water treatment methods will have only limited success in removing GENX.

The Division of Environmental Quality, in cooperation with various regional utilities, began testing raw water and finished water at multiple locations beginning the week of June 19, 2017 to determine the levels of GENX and other similar Perfluoroalkyl Ether Carboxylic Acids (PFECAs) and Perfluoroalkyl substances (PFAs). Additional information on this testing can be found at <https://deq.nc.gov/deq-starting-water-quality-sampling-genx-cape-fear-river>. Samples were taken at Brunswick County's Northwest Water Treatment Plant of both the raw water and the finished water on June 22, June 29th, and July 6th by DEQ staff. Additionally, in order to serve as additional sampling validation, Brunswick County staff took separate samples on June 29th and July 6th along with DEQ staff. The samples taken by Brunswick County staff were sent to a different laboratory than that used by DEQ staff.

Brunswick County has received the laboratory sample results from samples taken on June 29th. The levels of GENX found in the raw water were 36.8 Parts Per Trillion. The levels found in the finished water were 32.8 Parts Per Trillion. It is normal to see some variation in samples since they are two different volumes of water and due to the extreme level of analysis performed (parts per trillion). To provide a sense of how much a nanogram per Liter (Part Per Trillion) represents, some references indicate that a part per trillion is equivalent to one drop of water (0.05 mL) diluted into 20 olympic sized swimming pools (2500 m³), or about three seconds out of every one hundred thousand years.

Although the NC Department of Health and Human Services is expected to release additional health guidelines within the next ten days, a prior release by the NC Department of Health and Human Services stated "There are no U.S. regulatory guideline levels for GENX. However, as part of the European chemical registration, a 2-year chronic toxicity and cancer study with rats was performed. They reported a Derived No Effect Level (DNEL) of 0.01 mg/kg bw/day. Based on U.S. risk assessment calculations, this corresponds to a concentration in drinking water of 70,909 ng/L of GENX — more than 100 times greater than the mean value of 631 ng/L detected in the Cape Fear River. Based upon these data, the GENX levels detected in 2013-2014 would be expected to pose a low risk to human health."

The average level of 32.8 Parts Per Trillion from Brunswick County's June 29, 2017 samples are 19 times lower than the August 2014 samples.

Officials from NC DHHS and the Department of Environmental Quality (DEQ) are working with the EPA to learn more, and it is expected that later this week or early next week the samples from DEQ will be available along with additional information on Health Risk Levels from the North Carolina Division of Health and Human Services.

The full listing of June 29, 2017 sampling results are included below. Sampling was performed in accordance with EPA Method 571.

<u>Constituent</u>	<u>Raw Water Sample</u>	<u>Finished Water Sample</u>	<u>Percent Reduction</u>
perfluorobutanesulfonic acid (PFBS)	ND	ND	-
perfluorohexanoic acid (PFHxA)	11.6	8.91	23%
perfluoro-2-propoxypropanoic acid (GenX)	36.8	32.8	11%
perfluoroheptanoic acid (PFHpA)	10.7	5.74	46%
perfluorohexanesulfonic acid (PFHxS)	4.68 *	ND	100%
perfluorooctanoic acid (PFOA)	9.99	4.88	51%
perfluorononanoic acid (PFNA)	2.22 *	ND	100%
perfluorooctanesulfonic acid (PFOS)	14.3	5.22 *	63%
perfluorodecanoic acid (PFDA)	1.56 *	ND	100%
perfluoroundecanoic acid (PFUnA)	ND	ND	-
perfluorododecanoic acid (PFDoA)	ND	ND	-
perfluorotridecanoic acid (PFTrDA)	ND	ND	-
perfluorotetradecanoic acid (PFTA)	ND	ND	-

* The known standard does not read this low but the result is above the minimum detection limit of the equipment

ND - Non Detectable

PPT - Parts Per Trillion = Nanograms per Liter

The combined Health Risk Advisory level for PFOS and PFOA is 70 Parts Per Trillion. The combined amount found in the finished water sample was 10.1 Parts Per Trillion. Brunswick County will provide additional information as it becomes available.