Water Treatment and the Challenge of PFCs

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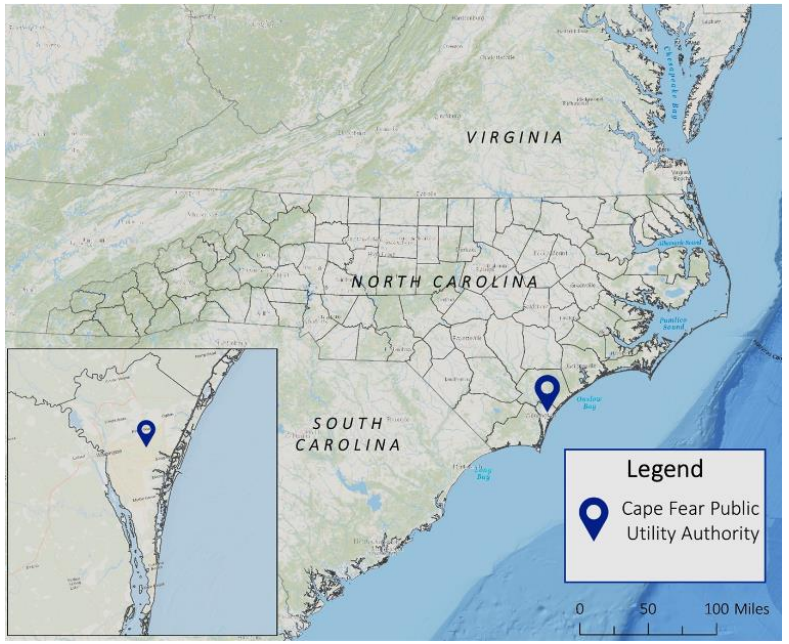
- Located in Wilmington, North Carolina
- 200,000 customers
- Two groundwater systems (7 mgd)
- One surface water system (35 mgd) - Cape Fear River raw water supply
- Per- and Polyfluorinated compounds (PFCs) detected in source and drinking water, including PFAS and specifically GenX and Nafion biproducts
- Neighboring counties (Brunswick and Pender County) detected similar results
- Conventional treatment, ozonation, biofiltration, UV disinfection do not remove PFCs
- More advanced treatment methods required to address PFAS compounds, including GenX and Nafion biproducts



Per-Fluorinated Compounds in the Cape Fear River

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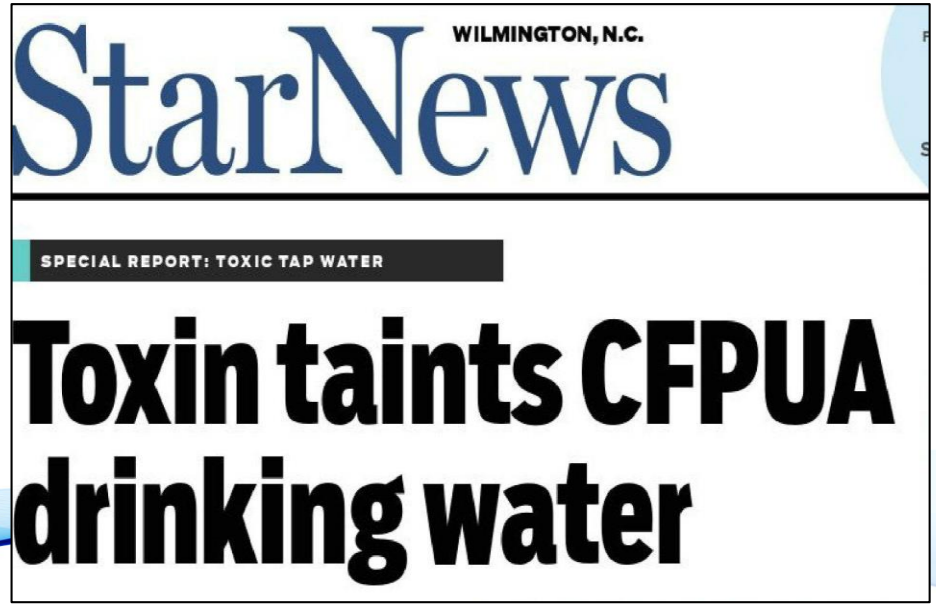
- June 2017 - *Wilmington StarNews* article on the presence of GenX in the Cape Fear River and in CFPUA drinking water.
- GenX is only about 12% of all PFCs quantified in source water.
- No MCL for GenX or other PFAS.
- NC-DHHS issued a preliminary health advisory level of 140 ppt for GenX.
- Customer Concerns:
  - Thousands of calls from concerned customers.
  - Numerous public forums, media interviews. Weekly press releases by CFPUA.
  - 9,400 people are members of the on-line "North Carolina Stop GenX in our Water" community organizing group.
  - Awareness of emerging contaminants has decreased consumer confidence in drinking water.
  - Utilities (ratepayers) should not bear the cost to address source water contamination by others.


WILMINGTON, N.C.

StarNews

SPECIAL REPORT: TOXIC TAP WATER

Toxin taints CFPUA drinking water

CFPUA Actions to Address PFCs in Drinking Water

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- Protecting public health is top priority for water systems
- Performed regular sampling of the water to monitor levels of PFAS compounds with testing standards
- Partnered with UNC-Wilmington to identify and quantify other per-fluorinated compounds in the River
- Opened two water stations to provide water from the groundwater systems to customers at no cost
- Removed 50 million gallons of water containing per-fluorinated compounds from aquifer storage/recovery well
- Conducted pilot study (GAC and Ion Exchange) to investigate feasibility to remove per-fluorinated compounds from the drinking water

Cost Impacts on CFPUA Ratepayers

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- Expended $1.8M to date, including $185,000 from the State of North Carolina for testing and research
- Fiscal Year 2019 operating budget includes additional $650,000 for legal fees and water quality testing
- Recommended design of advanced treatment to address PFAS compounds, including GenX and related contaminants
  - Capital cost = $46 million
  - Annual operating cost = $2.7 million
  - Life-cycle cost (through 2055) = $196 million
- Projected 7% rate increase in total water & sewer bill (14% for water only)

PFAS - Federal Assistance Needs

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- Toxicology research and analysis
  - Distinguish which subgroups of PFAS compounds warrant monitoring and potentially mandatory controls
- Communicate with public
  - Holistically frame risk posed by PFAS
  - Describe how consumers can limit their exposure to PFAS from all sources
  - Build awareness that detection does not equal risk of harm
- Support engineering decisions
  - Ongoing, open and transparent dialogue with the sector
  - Analytical methods, target analytes, and quantitation limits
  - Reliable performance expectations for treatment technologies
- Effective mitigation of sources of harmful PFAS compounds
  - Support Clean Water Act controls (discharge permits, pre-treatment permitting)
  - Guide for identifying sites of concern and management under CERCLA and RCRA
  - Prevent entry into commerce of those PFAS compounds that will subsequently pose a risk via drinking water contaminant
- Support drinking water primacy agencies
  - Consistency in risk assessment and communication by federal agencies and state co-regulators
- Adequate water infrastructure funding