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Environment, NCDEQ

Drinking Water Regulation and Public
Health – A Look at GenX and Emerging
Compounds

04/04/2018



Regulatory Program Overviews

- Toxic Substance Control Act
- Clean Water Act
 - NPDES permit (wastewater)
- Safe Drinking Water Act
 - Contaminant Candidate List
 - Unregulated Contaminant Monitoring Rule
- State Surface water and Groundwater Standards



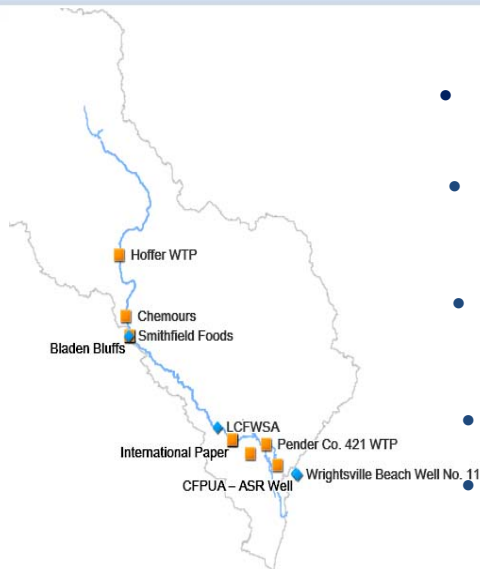
Division of Water Resources

Current Sampling

- Two composite samples weekly at Chemours wastewater outfall into the Cape Fear River: Monday - Thursday and Friday - Sunday
- Drinking water facilities downstream are sampled weekly:
 - Bladen Bluff
 - International Paper
 - NW Brunswick
 - Pender County
 - CFPU Sweeney
- Other watersheds across North Carolina
 - Began monthly monitoring in Jordan Lake watershed Jan. 2nd



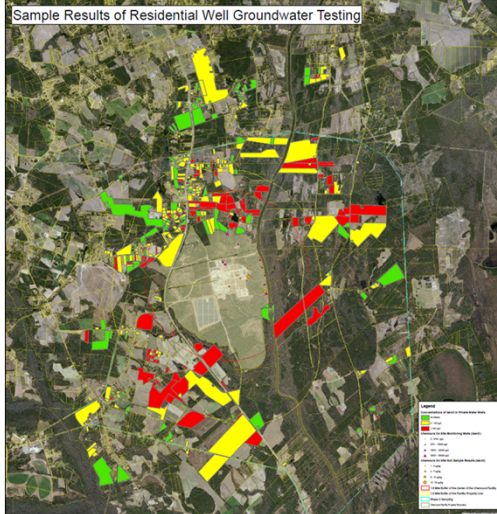
DEQ Sampling - Cape Fear River



- Process area sampling at Chemours
- Weekly composite sampling at the Chemours wastewater outfall 002
- Weekly sampling of finished drinking downstream of the Chemours facility
- Aquifer Storage Recovery Well
- Nearby Public Water Supply Wells



Division of Waste Management



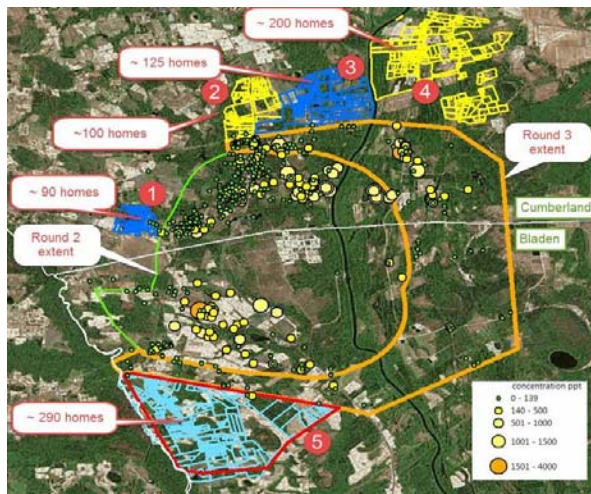
Well Sampling Results
in the Chemours area,
Phases 1-4
(up to ~ 4 mi. from facility border)

GenX: NC health goal = 140 ng/l

Red = > 140 ng/l
Yellow= 0-140 ng/l
Green = Non detect



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Chemours "Phase 4"
sampling plan

Starts with areas in red and
yellow (2, 4 and 5)

287 residences have been
sampled thus far in phase 4

Data is showing a lower
percentage of wells above
the health goal



Division of Waste Management

Combined Phase I, II, III, IV (partial) Private Well PFAS Data
Includes Robeson Co Data

Private Well Water GenX Summary	Phase I, II, III, IV partial Combined (%)
Distance from Chemours' border	Up to 4 miles
Well Collection Dates	9/6/2017 – 2/18
Number of Wells tested	748
Number of Exceedances of the GenX Provisional Health Goal	190
Number of Not-Detected ("ND") GenX Analyses	198
Number of GenX Detections Less than the Health Goal ^a	360
Maximum Detected GenX Concentration	4000 ng/L

^a The NC DHS Provisional Drinking Water Health Goal for GenX is 140 ng/L (July 2017)



Granular Activated Carbon Point of Use Filtration Systems

- Chemours has submitted to DEQ a proposal to install granular activated carbon filtration systems for residences with Gen X present in the well at or above 140 ppt
- DEQ has provided initial feedback to Chemours to include the requirement to install 5 additional filter systems for sampling
- Installation of the systems should start this week
- Sampling data regarding the effectiveness of the systems will be shared online



Fish Tissue Testing

Marshwood Lake Testing by DEQ

- DEQ sampled Marshwood Lake on March 14:
 - Five surface water samples
 - Two composite sediment samples
 - Two fish species composite samples (Largemouth Bass and Redear Sunfish, composites from multiple fish)

- A drinking water well onsite at the lake was sampled
- A composite sediment sample was taken from Lock & Dam 3 in the Cape Fear River

- All samples collected will be analyzed using USEPA M537-modified for Full PFAS Suite at GEL Labs.
- Surface water will also be tested for Total Organic Carbon, Dissolved Organic Carbon, pH and Total Particulates



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Groundwater – Next Steps

- **Chemours On-Site Investigation**
 - Sample some 40 additional on-site monitoring wells for GenX and other compounds of concern to determine groundwater contamination on-site.
 - Install both shallow and deep monitoring wells to refine the groundwater flow model for the site.
 - Conduct shallow and vertical soil profiling of GenX into deeper areas of the subsurface to learn the extent of soil contamination and the ability to impact the groundwater through leaching.

- Determine if Willis Creek is a discharge point for groundwater.

- Conduct Aquifer tests to determine transport characteristics of the subsurface.

- Determine the areas of the site that caused the releases of contaminants.

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Division of Air Quality

Air Emissions Testing or "Stack Testing"

Target contaminant – C₃ Dimer Acid (GenX)

Purpose of testing is to quantify the emission rate of GenX during specific chemical campaigns at various processes

DAQ staff are on-site for every day of testing



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Air Emissions Testing

Preliminary Testing – January 9, 2018 Polymer Processing Aid (PPA) process

Testing – January 22-26, 2018

PPA process

Vinyl Ethers North - Division Scrubber Stack

February 26 – March 2, 2018

PPA process

Vinyl Ethers South

March 19-23, 2018

Vinyl Ethers North – Division Scrubber Stack

IXM Polymers Stack

Semi-works Stack



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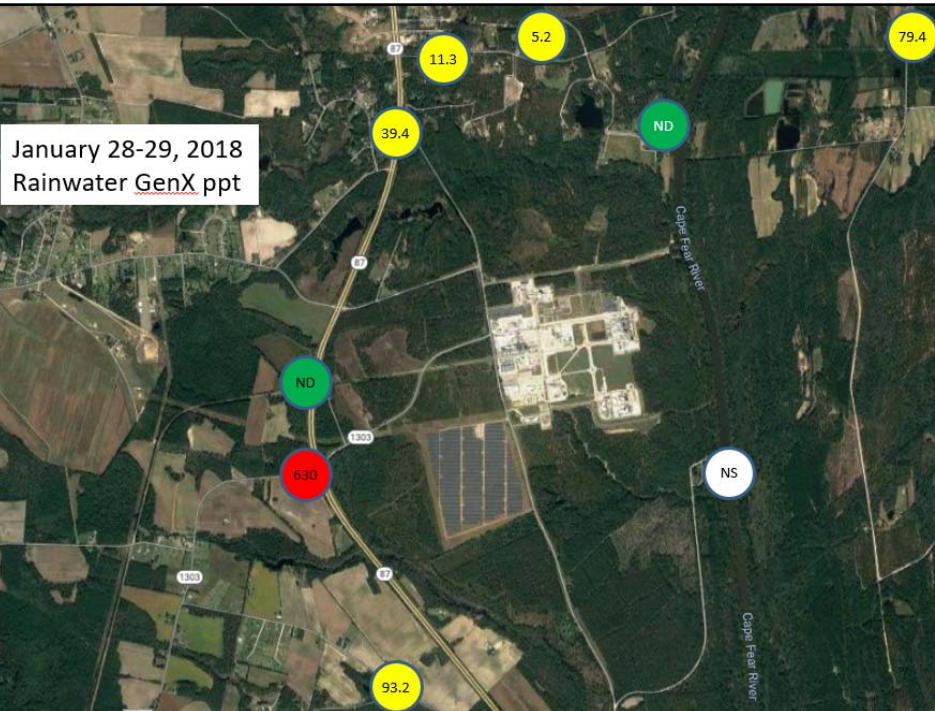
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Ambient Air Quality Monitoring

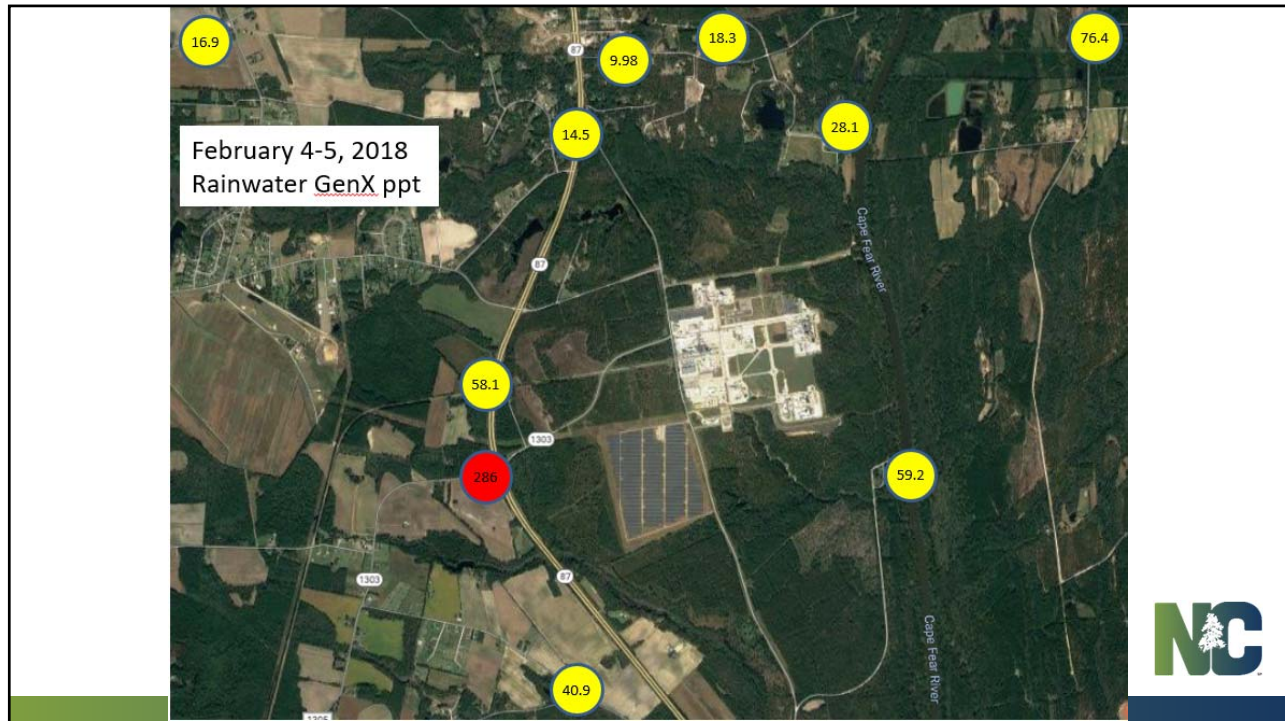
- Network of wet deposition monitors planned
- Goal: Quantify near-field deposition rates and confirm cause/effect relationships. Quantify “background” amounts of PFAS in rainwater.
- Preliminary wet deposition samples under analysis
 - Source-oriented sites near Chemours
 - 2 northeast of facility
 - 2 southwest of facility
 - Background sites
 - Asheville
 - Raleigh
 - Candor
 - Wilmington



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Emissions Controls:

- Chemours has taken steps to address equipment leaks, including:
 - Enhanced leak detection and repair program
 - Adjusting process parameters and upgrading equipment
- Chemours has committed to installing and operating carbon bed adsorbers by May 25, 2018 on:
 - PPA process and room air
 - Vinyl Ethers North room air
- Chemours is also evaluating additional carbon bed adsorber applications and scrubber efficiency upgrades as interim measures



Enforcement Summary

- Sept. 5th - 60-day Notice of Intent to Suspend NPDES Permit
- Sept. 6th - NOV & Intent to Assess Civil Penalty for Groundwater Violation
- Sept. 8th – Partial Consent Order, Bladen County Superior Court
- Oct. 24th – Lifted Sept. 5th Intention to Suspend NPDES Permit
- Nov. 13th – NOV & Intent to Assess Civil Penalty related to release on Oct. 6th
- Nov. 16th – Notice of Partial Suspension and 60-Day Notice of Intent to Partially Revoke NPDES Permit
- Feb. 12th 2018 – Immediate Action Notice of Violation



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Next Steps – Emerging Compounds

- Secretaries' Science Advisory Board
- UCMR
- NPDES Permitting – Disclosure Requirements
- Lab Test Standards
- Health Risk Information
- General Public Education



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Questions?

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<https://deq.nc.gov/news/hot-topics/genx-investigation>

