Select Committee on North Carolina
River Quality
November 30, 2017
Material Topics

• Latest surface water and groundwater monitoring results
• Information on air emissions from the Chemours Fayetteville Works facility
• Enforcement action update
• Additional emerging compounds
• Information on water quality monitoring – including follow up from the November meeting
Divisions

• Division of Water Resources

• Division of Waste Management

• Division of Air Quality
Division of Water Resources
National Pollutant Discharge Elimination System (NPDES)

- Program Established in 1972 by the Clean Water Act (Federal Water Pollution Control Act)
- 1975- EPA delegates NPDES permitting authority to NC
- 1992- EPA delegates authority to issue general permits to NC
Wastewaters Permitted Through NPDES Program

- Domestic wastewater
- Industrial process wastewater
- Municipal wastewater
- Groundwater remediation
- Water treatment plants
- Process area stormwater
Types of Wastewater Permits Issued

• Majors - 230 Total
  o Municipal
  o Industrial

• Minors - 891 Total
  o Municipal
  o Industrial
  o 100% Domestic
  o Groundwater Remediation
  o Water Treatment Plants

• Authorizations to Construct (ATC)
  o Issued 34 ATC permits in 2016
NPDES Wastewater Permitting

• General Permits (1,773 Certificates of Coverage Issued)
  
  o NCG500000: Non-contact cooling water, boiler blowdown
  
  o NCG510000: Groundwater remediation
  
  o NCG520000: Sand dredging runoff wastewater
  
  o NCG530000: Fish farms: Seafood packing & rinsing operations
  
  o NCG550000: Single-family residences <1000 GPD
  
  o NCG560000: Pesticide application runoff
  
  o NCG590000: Water treatment plants

PERMITS REVISED AND REISSUED EVERY FIVE YEARS
NPDES Wastewater Permitting

Permit Renewal Process

• Draft Permits are Public Noticed in Newspapers and on DWR website

• Draft permits are subject to a 30-Day Public Comment Period

• Draft Permits receive input from stakeholders, including applicant, public, EPA (majors), PWS, DMF, USFWS, and other agencies

• Permits Issued for 5 year period (maximum) based on a basin wide schedule
Conventional Parameters

• Total Suspended Solids (TSS), Fecal Coliform, pH, Oil and Grease, Biochemical Oxygen Demand (BOD), and ammonia-nitrogen

Nutrients

• Total Nitrogen, Total Phosphorus

Toxicants

• Ammonia-nitrogen, Heavy metals (copper, lead, zinc, chromium, etc.), Organic chemicals (benzene, phenol, etc.), Unregulated chemicals
How NPDES Permits Protect Water Quality

• Considers Assimilative Capacity of Receiving Stream

• Uses conservative approach in limits calculation
  o Low stream flow (7Q10)
  o Maximum design flow

• Evaluates existing conditions
  o Upstream influences
  o Waterbody impairments
NPDES Responsibilities Beyond Permitting

1. Compliance & Enforcement
2. Issue Tax Certifications [NCGS105-275.(8)]
3. EPA Reporting
4. Fee Recovery
5. Electronic Discharge Monitoring Report (eDMR Overview)
6. Modelling for Smaller Facilities
7. Speculative limitation letters for municipalities
A Publicly Owned Treatment Works e.g. (Sanitary District or municipality) which accepts wastewater from a Significant Industrial User (SIU) must develop a pretreatment program (40 CFR 403)

**The purpose of the Pretreatment Program**
- Protect the stream (meet NPDES permit limits and water quality standards)
- Protect the WWTP (healthy microorganisms)
- Allow for Beneficial reuse of biosolids
Pretreatment Typicalville

- Commercial
- Residential

WWTP
- 5 MGD
- Aeration Basin
- Clarifier
- Disinfection
- Digester

Land Application Standards

NPDES Permit Limits
Water Quality Standards
Pretreatment Program

• A SIU is an industrial user who:
  • Discharges 25,000 gallons per day or more of process wastewater
  • Contributes 5% or more of the permitted flow or organic capacity (BOD, TSS, NH3)
  • Is covered by federal categorical standards (e.g. organic chemical manufacturing)
  • The control authority has determined has a reasonable potential to adversely impact the operation of the POTW

• Comparison of NPDES Direct River Discharge vs. Pretreatment Program
  • 64 Major Industrial NPDES Permits
  • 636 Significant Industrial Users in 114 different municipal Pretreatment Programs
Major NPDES Permit Backlog History
**Division of Water Resources - 31 Staff Working on GenX**

<table>
<thead>
<tr>
<th>Interim Director, Interim Deputy Director, Administrative Assistant</th>
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<tbody>
<tr>
<td><strong>Water Quality Regional Operations (WQRO)</strong></td>
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<tr>
<td>Env. Program Manager</td>
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<td><strong>WQRO: Fayetteville Office</strong></td>
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<td>Env. Program Supervisor</td>
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<td>Env. Specialist</td>
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<td>Env. Program Consultant</td>
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<td>Env. Senior Specialist</td>
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<td><strong>WQRO: Wilmington Office</strong></td>
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<td>Industrial Hygiene Consultant*</td>
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<td><strong>Public Water Supply</strong></td>
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**Key**

- Federal: 11 FTE  |  State: 13 FTE  |
- * Receipt: 7 FTE
Current Weekly Sampling

Division of Water Resources Staff Conduct Weekly Sampling

• The Chemours outfall 002 has two composite samples: Monday - Thursday and Friday - Sunday

• Drinking water facilities downstream are sampled weekly:
  Bladen Bluff
  International Paper
  NW Brunswick
  Pender County
  CFPU Sweeney
Data at Chemours Outfall 002 (parts per trillion)
Site inspection

Area of Chemours plant where Oct. 6th release occurred and entered the waterway that discharges to outfall 002.
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
Division of Waste Management
Division of Waste Management: 19 Staff Working on GenX

- **Division Level**
  - Division Director
  - DWM Safety Officer
  - Public Information Officer

- **Hazardous Waste Section**
  - Section Chief
  - Toxicologist
  - Office Assistant

- **Facilities Management Branch**
  - Branch Manager
  - Hydrogeologist

- **Financial and Info. Mgmt. Unit**
  - Processing Assistant

- **Compliance Branch**
  - Branch Manager
  - Unit Manager
  - Hydrogeologist
  - Chemist
  - 3 Environmental Senior Specialists
  - 2 Environmental Senior Specialists
  - Office Assistant

*Color Code:*
- Paid by Fees
- Paid by Federal Funding
- Paid by State and Federal Funding
- Paid by State Funding and Fees
Private Well Sampling Results

Private Wells Sampled (Phase 1): 141
Total # wells with exceedance of the Gen X NC DHHS provisional health goal: 51
Total # wells reported as non-detect (ND): 35
Total # wells with a Gen X detection (including those above the health goal): 106
Total # wells with a Gen X detection less than the health goal: 55
The maximum detected Gen X concentration (ppt) is: 1300
Private Well Sampling Results (Phase 2)

Private Wells Sampled: 107

- Total # wells with exceedance of the Gen XNC DHHS provisional health goal: 34
- Total # wells reported as non-detect (ND): 25
- Total # wells with a Gen X detection (including those above the health goal): 82
- Total # wells with a Gen X detection less than the health goal: 48

The maximum detected Gen X concentration is: 1200 ppt
Additional DEQ Sampling

- Two Cumberland County Elementary school wells were sampled. (Gen x levels of 5 ppt and Non detect)

- Surface water samples were collected at Camp Dixie in Bladen County and Marshwood Lake in Cumberland County. (Gen x levels of 620 and 915 ppt)

- DEQ has worked collaboratively with DHHS to address use of recreational areas.

- DEQ has also sampled an athletic field in Cumberland County that used well water onsite.
Alternate Water Update

• Bottle water is currently being provided to Bladen and Cumberland County residents who have GenX above the state’s provisional drinking water health goal of 140 parts per trillion.

• Chemours delivers a letter to each residence that has an exceedance with 5 cases of water.

• DEQ reviews lab data and sends a health risk evaluation letter to each well owner noting appropriate uses of the water.

• Each residence is then set up with Cyrstal Springs who provides water dispensers.

• Bottle water is also available at the Chemours plant after an exceedance is detected.
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.
Division of Air Quality
**Division of Air Quality: 17 Staff Working on GenX**

- Resources devoted to emerging compounds have increased as the Chemours situation has unfolded.

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<thead>
<tr>
<th>Fayetteville Regional Office</th>
<th>Compliance</th>
<th>Permitting</th>
<th>Ambient Monitoring</th>
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<tr>
<td>Journey Engineer</td>
<td>Section Chief</td>
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<td>Environmental Senior Specialist</td>
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Chemours reported air emissions (pounds per year)

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- All data based on chemical process computational model.
What’s the role of air emissions?

• Wind data

• Air dispersion modeling
Department of Environmental Quality
Division of Air Quality

Wind Rose for Fayetteville Airport (KFAY)
Jan. 10, 1998 to Sep. 29, 2017

Calm Winds: 12.02%

Average Wind Speed: 7.25 mph
Average Wind Direction: NA degrees

Maximum Wind Speed: 46.08 mph
Direction of Maximum Wind: 10 degrees
Department of Environmental Quality  
Division of Air Quality  

Air Dispersion Modeling  

• Chemours actual air emissions for 2012-2016  
  • GenX compounds only  

• Actual stack characteristics  

• Actual hourly meteorology over the 5-year period
Air Emissions Testing or “Stack Testing”

Capture and quantification of specific pollutants being emitted to the atmosphere from a process through the stack.

Chemours has submitted a protocol to define which sources they will test, which test method they will use and which contaminant they will target for quantification.
Target contaminant - HFPO Dimer Acid (GenX)

Test method – EPA M0010 Modified Method 5 with XAD traps for the capture of volatile and semi-volatile organics

Three 180 minute test runs will be performed during normal process operations

Analysis – liquid chromatography with two mass spectrometry analyzers (LC/MS/MS)
Department of Environmental Quality  
Division of Air Quality

Sources to be tested:

Fluoromonomers, Nafion, and Polymer Processing Aid (PPA) Processes

Test Locations - Division, VE South Scrubber and PPA Stacks

Testing will be performed post – scrubber. The goal of the test is to quantify the emissions of GenX to the atmosphere during the test period.

The emissions testing will help verify emissions estimates previously submitted
Follow up item

• Interstate Chemicals Clearinghouse (IC2)
  - Annual fees based on population – North Carolina = $10,000

• IC2 Members benefit through:
  • Consistency in state implementation of chemical policies and laws, including product reporting and other data gathering activities, phase-outs and bans, and labeling
  • Interstate communication on legislative initiatives, laws, and rules
  • Efficient and effective communications with the regulated community
  • Interstate collaboration on public education
  • Coordination on the measurement of the impacts of chemical policy initiatives
  • Common public access to relevant state information and guidance
  • Effective training and capacity building opportunities
  • Sharing of methodologies and resources on such topics as safer alternatives assessments

• California, Maine, Minnesota, Oregon, Vermont and Washington
  – share their chemicals of concern on the IC2 website: http://www.theic2.org
Questions?

Sheila Holman
Assistant Secretary
NC Department of Environmental Quality
919-707-8619