Chemours / EPA-OECA Meeting
February 27, 2019

Settlement Confidential

WACHTELL, LIPTON, ROSEN & KATZ

Arnold&Porter

Chemours' Objectives in Requesting Meeting

Chemours is:

- committed to ensuring that its operations are compliant with all federal and state environmental requirements.
- focused on enhancing its operations to continue to manufacture highly valued products while protecting public health and the environment.

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Chemours' Objectives in Requesting Meeting

Chemours requested to meet with OECA to:

- continue a dialogue of how we can work together to meet mutual objectives in a constructive and transparent manner.
- tell you about our landmark settlement in North Carolina.
- tell you about the other proactive actions we have already taken and are planning.
- discuss EPA's information requests and TSCA NOV.

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Proposed Agenda

- Chemours' History and Products
- Chemours' Commitment to Sustainability
- Comprehensive Consent Order Agreed to in Fayetteville
- Chemours' Historic GenX Operations Have Been Legal and Appropriate
- TSCA NOV Issues Are Being Addressed
- Washington Works – Status and Progress
- Chambers Works – Status and Progress
- Update on Fluorochemical Facilities
- Other Issues, Including CWA Section 308 Responses
- Discussion and Next Steps

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Proposed Agenda

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Who Is Chemours?

- Who is Chemours?
  - a new independent publicly traded company
  - spun off by DuPont in July 2015
  - operated what had been DuPont's performance chemicals businesses
- Chemours
  - faced very substantial financial challenges during its infancy
  - has emerged as a stronger company dedicated to being an industry leader with a corporate culture built on integrity and good corporate citizenship
- Chemours and its management are committed to environmental stewardship and sustainability as core goals in all aspects of its operations.

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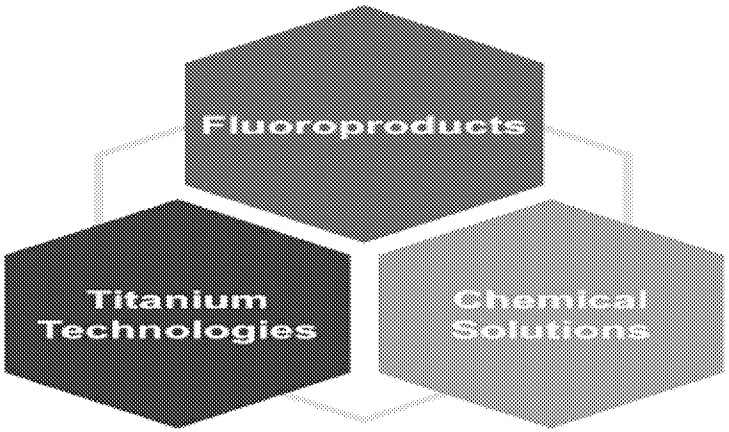
Who Is Chemours?



Chemours™

OUR COMPANY | BUSINESSES & PRODUCTS | APPLICATION DEVELOPMENT | INVESTOR RELATIONS

TITANIUM TECHNOLOGIES
Chemours is the world's largest producer of titanium dioxide.

TI-PURE™ ONE COAT SYSTEMS
COATINGS APPLICATIONS
TI-PURE™ SELECT TS-6300
TI-PURE™ SELECT TS-6200
TI-PURE™ R-902+ FOR VERSATILITY
TI-PURE™ R-706 FOR FLEXIBILITY

FLUOROPRODUCTS
Chemours is a leading producer of fluoroproducts.

OPTEON™ YF MOBILE REFRIGERANT
OPTEON™ STATIONARY REFRIGERANTS
TEFLON ECOELITE™ FOR FABRICS
TEFLON™ BRAND CONSUMER APPLICATIONS
KRYTOX™ LUBRICANTS
NAFION™ MEMBRANES AND DISPERSIONS
VITON™ FLUOROELASTOMERS

CHEMICAL SOLUTIONS
Chemours is a leader in safe, efficient industrial chemicals production.

MINING SOLUTIONS
GLYPURE™ GLYCOLIC ACID
VAZO™ CHEMICAL INITIATORS
METHYLAMINE CHEMICAL INTERMEDIATES
ANILINE INDUSTRIAL CHEMICALS
GLYCLEAN™ FOR SEMICONDUCTORS

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Chemours' Fluoroproducts Business Manufactures Many Important Products

- The business supplies **fluoropolymer** products (e.g., resins, coatings) for high performance applications across a broad array of industries

- The business supplies **fluorochemical** products for air conditioning, refrigeration, and foam blowing agent markets

- Brands include Teflon™, Freon™, Opteon™, Krytox™, Nafion™, and Viton™

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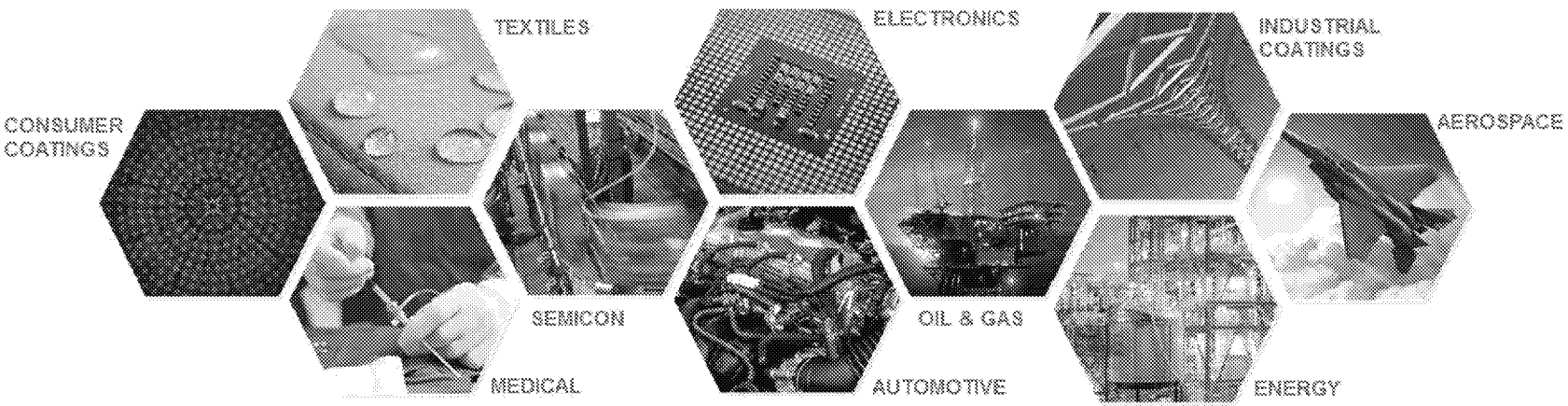
Chemours' Fluoroproducts Business Manufactures Many Important Products

Chemours Fluoropolymers



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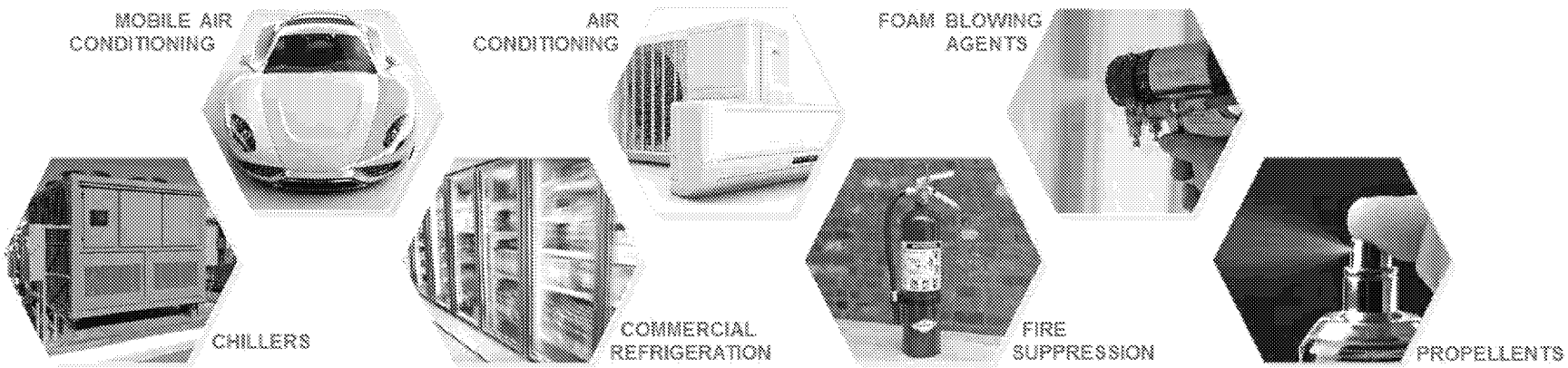
Chemours' Fluoroproducts Business Manufactures Many Important Products

Chemours Fluorochemicals



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Fayetteville, Washington and Chambers Works Manufacture Highly Valued Fluoroproducts

- **Chemours-Fayetteville Works** manufactures:
  - Nafion® membranes, which are used in:
    - Chloralkali production, fuel cells and other energy-storage devices
  - Fluoromonomers and other materials used at our other production sites

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Fayetteville, Washington and Chambers Works Manufacture Highly Valued Fluoroproducts

- **Chemours-Washington Works** manufactures:
  - Fluoromonomers used to make Teflon™ fluoropolymers
  - Teflon™ fluoropolymer products which are used in a wide-variety of applications including:
    - Nonstick consumer and industrial coatings, semiconductors, wire and cabling

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Fayetteville, Washington and Chambers Works Manufacture Highly Valued Fluoroproducts

- **Chemours-Chambers Works** manufactures:
  - Krytox™ high-performance synthetic lubricants for a broad variety of industrial and governmental applications
  - Viton™ fluoroelastomers for automotive and aerospace applications
  - Capstone™ repellents and surfactants for coatings, textiles and fire fighting foams

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Fayetteville, Washington and Chambers Works Manufacture Highly Valued Fluoroproducts

- Chemours' fluoroproducts are used in a number of governmental applications, for example:
  - Krytox™ lubricants are an integral component of F-35 aircraft
  - Teflon™ products are used in numerous other military aircraft and ships
  - PTFE is used in submarine and helicopter bearings, ultralight batteries, military garments and liners, first responder protective gear, and NASA satellite components and spacecraft

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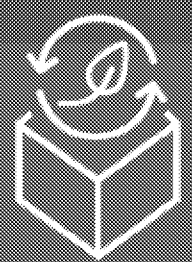
Chemours Is Committed to Corporate Responsibility

Chemours Corporate Responsibility Goals align with the 2030 United Nations Sustainable Development Goals.

Chemours Is Committed to Corporate Responsibility

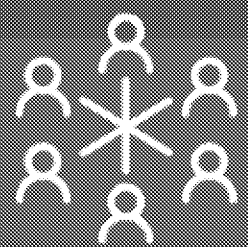
Our commitment to corporate responsibility begins with our 2030 goals focused in three areas.



1. Evolved Portfolio

Sustainable Offerings

Sustainable Supply Chain

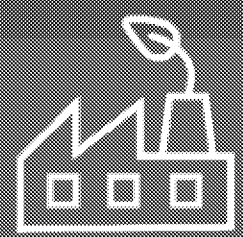


2. Inspired People

Safety Excellence

Vibrant Communities

Empowered Employees



3. Shared Planet

Climate

Water

Waste

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Chemours Is Committed to Corporate Responsibility

Our 2030 Corporate Responsibility Commitment

Evolved Portfolio

Sustainable Offerings
- 50% or more of our revenues will be from solutions that make a specific contribution to the 2030 United Nations Sustainable Development Goals

Sustainable Supply Chain
- Baseline the sustainability performance of 80% of suppliers by spend and demonstrate 15% improvement

Inspired People

Safety Excellence
- Improve employee, contractor, process, and distribution safety performance by at least 75%

Vibrant Communities
- Invest $50M in our communities to increase access to STEM skills and improve lives through environment and safety programs

Vibrant Employees
- 50% of all positions globally filled with women
- 20% of all US positions filled with ethnically diverse employees

Shared Planet

Climate
- Reduce greenhouse gas emissions intensity by 50%
- Progress our plan to become carbon positive by 2050

Water
- Reduce air and water process emissions of fluorinated organic chemicals by 99% or greater

Waste
- Reduce landfill volume intensity by 70%

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C3 Dimer Acid Was Developed as a Substitute for PFOA

- Under EPA's PFOA Stewardship Program, DuPont and seven other companies worked to reduce PFOA use by 2010 and eliminate it by 2015.

- DuPont developed C3 Dimer Acid and its ammonium salt as its PFOA substitute.
  - Extensive health and safety testing conducted on C3 Dimer Acid was favorable, including rapid elimination from mammalian systems.

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C3 Dimer Acid Was Developed as a Substitute for PFOA

- In 2008, DuPont submitted a PMN under TSCA to begin commercial manufacture of C3 Dimer Acid at DuPont's Fayetteville Works.

- In 2009, EPA and DuPont entered into a TSCA Section 5(e) Consent Order that contains a range of requirements, which currently applies to Chemours, including:
  - Completing additional studies
  - Recovering/capturing 99% of the substance.

- Commercial production began in 2013.

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C3 Dimer Acid/GenX Terminology

- GenX: Commercial name for two chemical substances manufactured by Chemours:
  - HFPO Dimer Acid (CAS # 13252-13-6); also known as C3 Dimer Acid, P-08-508, FRD903, GX903, or C3DA
  - HFPO Dimer Acid Ammonium Salt (CAS # 62037-80-3); also known as ammonium salt of C3 Dimer Acid, P-08-509, FRD902, or GX902
- As a product, it is manufactured in only one location, at Fayetteville Works.
- It is used for its intended purpose as a polymerization processing aid at Washington Works and Chambers Works.
- C3 Dimer Acid also is formed as an unintentional byproduct or impurity from other processes at the Fayetteville Works and Chambers Works facilities.

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C3 Dimer Acid/GenX Terminology

- For ease of reference, we will generally use the commercial name "GenX" for the remainder of this presentation.

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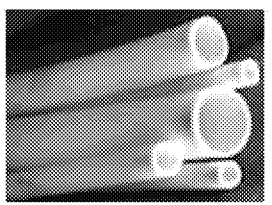
PFAS Terminology

- "Fluorinated substances" is a general, nonspecific name that describes a universe of organic and inorganic substances that contain at least 1 F atom, with vastly different physical, chemical, and biological properties (Banks et al. 1994).

Fluorocarbons C-F

SOLID



Polytetrafluoroethylene

PTFE Plastic

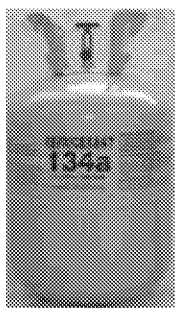
LIQUID

Fluorotelomer

Alcohol

$C_nF_{2n+1}CH_2CH_2OH$

GAS



HFC-134a

Refrigerant

- We consider "fluorochemicals" to be substances comprised of small, organic fluorinated molecules.

PFAS Terminology

- "PFAS" are a **subset** of fluorinated substances and are defined as "aliphatic substances containing one or more C atoms on which all the H substituents present in the nonfluorinated analogues from which they are notionally derived have been replaced by F atoms, in such a manner that PFASs contain the perfluoroalkyl moiety C_nF_{2n+1}–" (Buck et al. 2011).
  - PFAS represent a diverse family of chemistries and, by some estimates, thousands of unique substances: polymers and non-polymers; solids, liquids and gases; persistent and non-persistent substances; highly reactive and inert substances; mobile and insoluble substances; and toxic and nontoxic chemicals (Henry et al. 2018).

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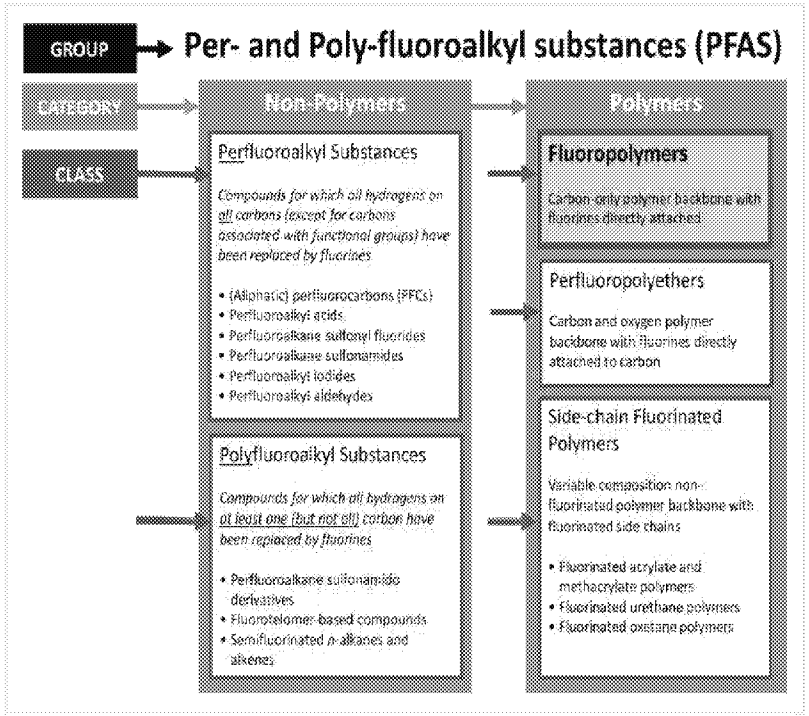
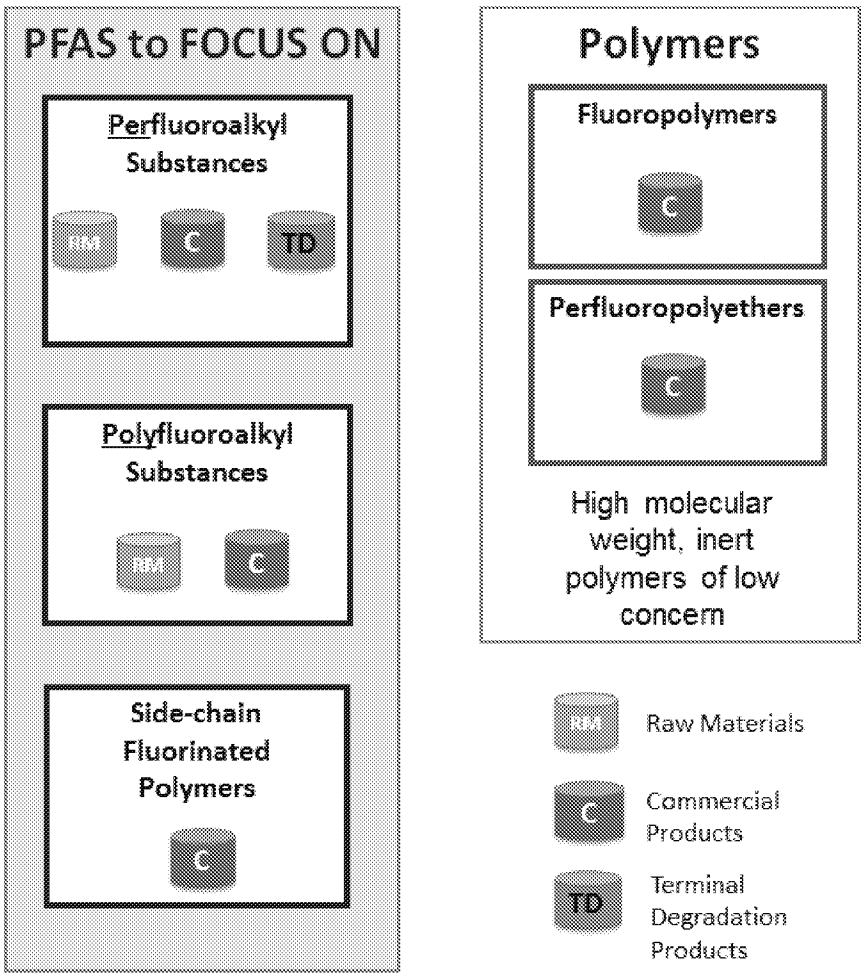
Chemours Is Prioritizing Focus on "Bins" of PFAS of Most Relevance to Human Health and the Environment

- PFAS are divided into 2 primary categories (Non-polymers and Polymers) and 5 sub-classes (figure excerpt from Henry et al. 2018).
- There are significant differences in physicochemical and toxicological properties between, as well as within, these classes of PFAS.
- Chemours is actively working on PFAS segmentation or "binning" to prioritize focus on the substances of most relevance to human health and the environment.



Chemours Is Prioritizing Focus on "Bins" of PFAS of Most Relevance to Human Health and the Environment



Chemours Is Invested in Advancing PFAS Analytical Chemistry

- Since June 2017, Chemours has invested over $3.5 million in advanced state-of-the-art analytical instrumentation to perform numerous studies, including:
  - Performing non-targeted analysis on various process and waste streams to identify unknown compounds
  - Developing and sharing analytical test methods for the quantification of identified compounds at parts per trillion levels
  - Developing and sharing authentic analytical lab standards

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Chemours Is Invested in Advancing PFAS Analytical Chemistry

- Chemours has maintained technical dialog on these efforts with researchers from government agencies and academic institutions, for example:
  - EPA: Mark Strynar at RTP, and Scott Sivertsen at Region 4
  - NC State: Professor Detlef Knappe
  - UNC-Charlotte: Professor Mei Sun

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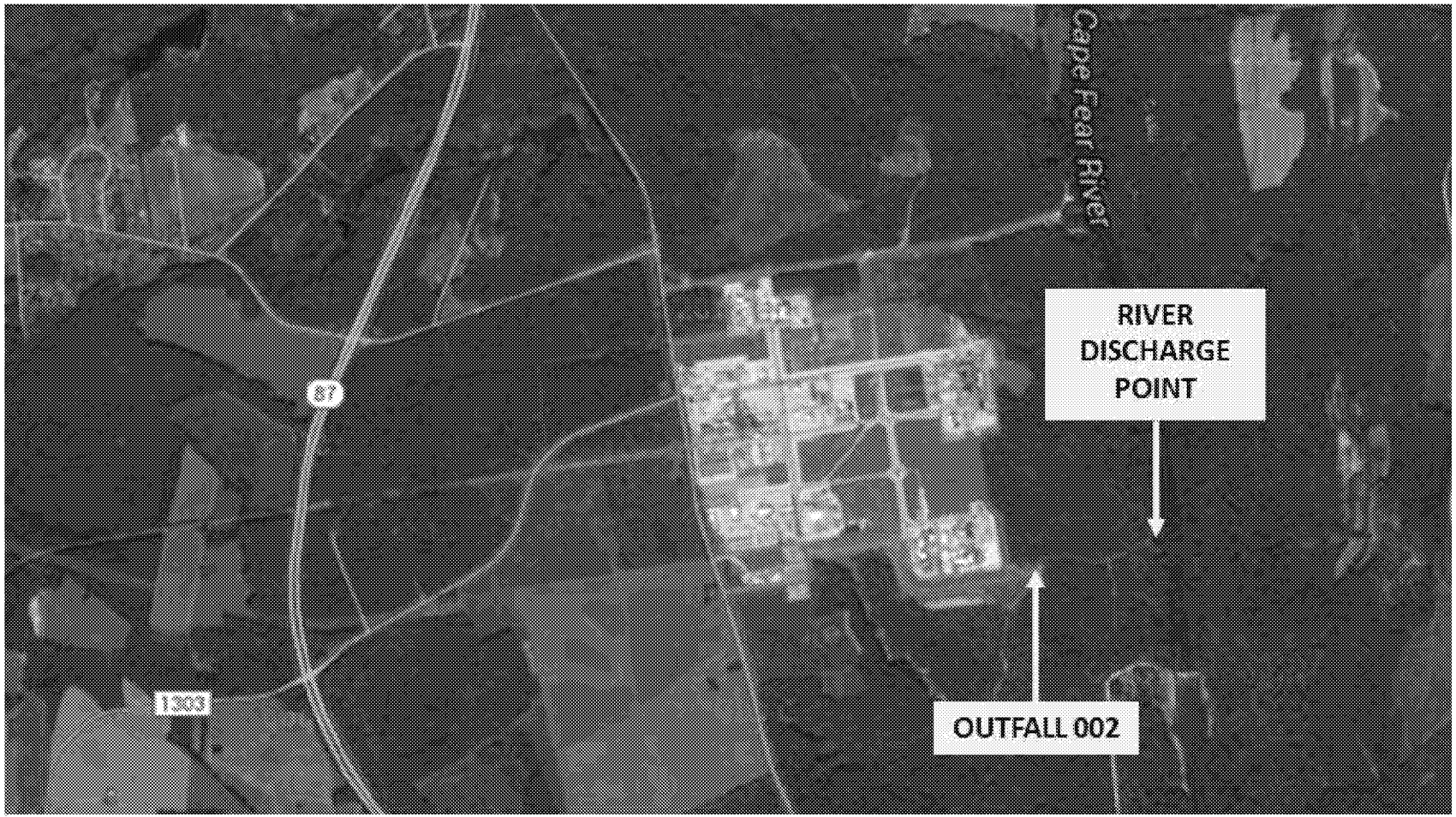
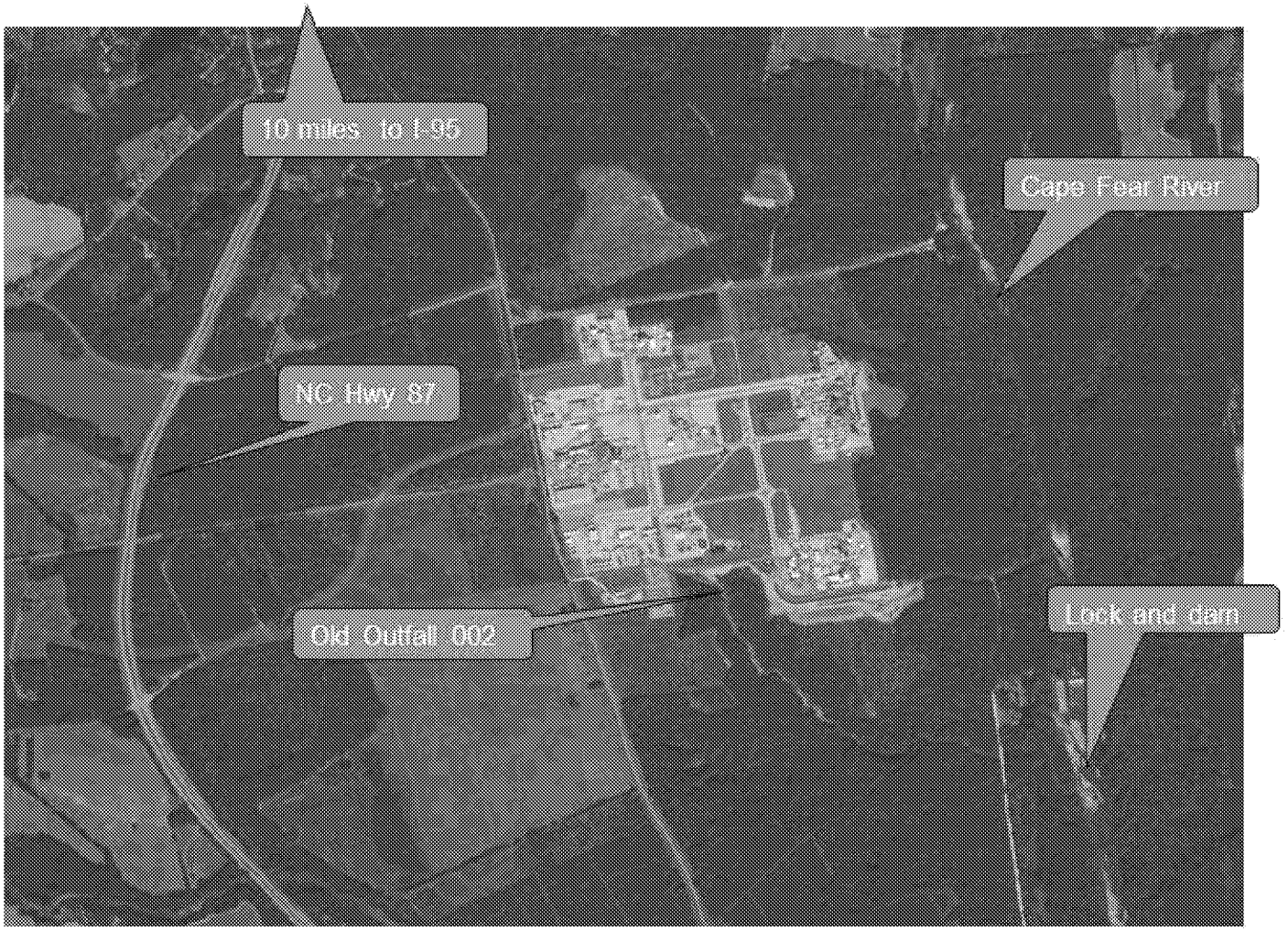
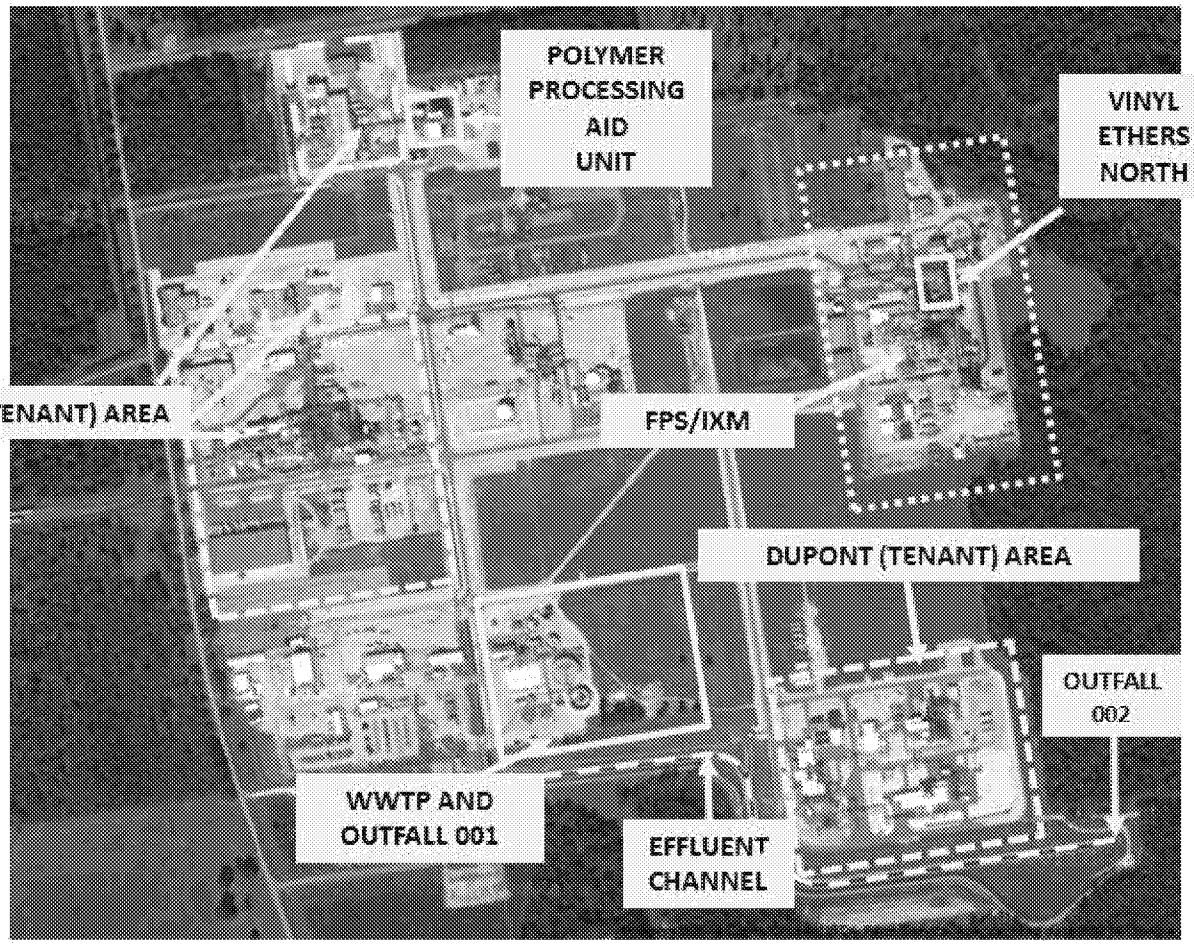
Fayetteville Works Site Overview



Fayetteville Works Site Overview



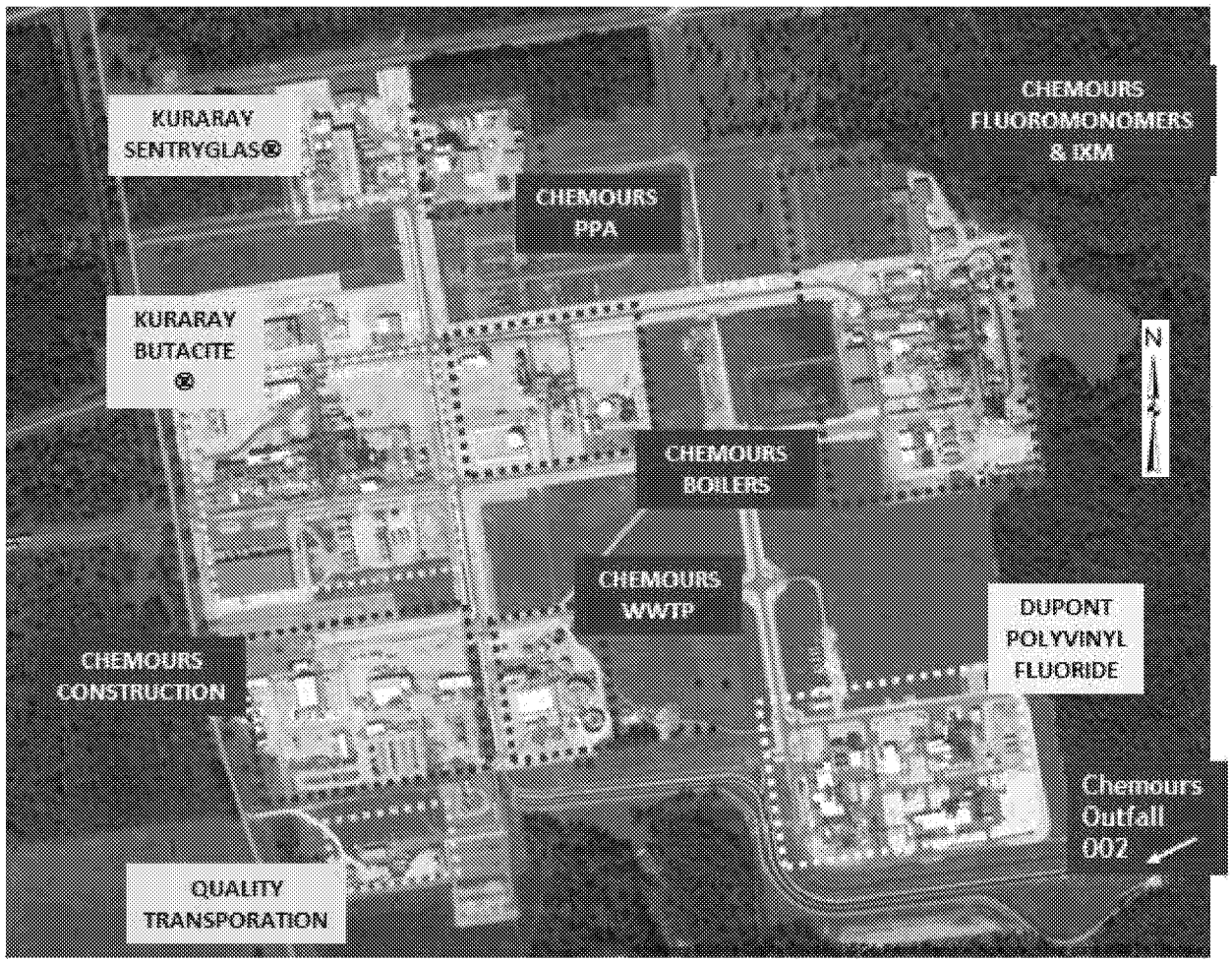
Fayetteville Works Site Overview



C3 Dimer Acid is manufactured at the Polymer Processing Aid ("PPA") unit, only.

Process wastewater generated from the PPA unit has always been captured for off-site disposal. There has never been a pipe connection between the PPA unit and Outfall 002 or the River.

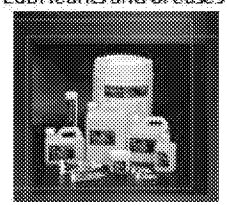
Fayetteville Works Site Overview



Fayetteville Works
Makes Important Fluoroproduct Intermediates

Fluoroproducts made with intermediates made at Fayetteville Works:

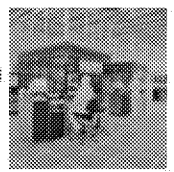
HFPO in Krytox™
Lubricants and Greases



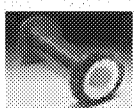
PPVE & PEVE in Industrial Coatings
(PFA/FEP/*ETFE - Teflon™)

Local Area
Network Cables

Semi-Con Fab Liquid
Handling Systems

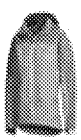


Chemical Plants
Pipe Lining

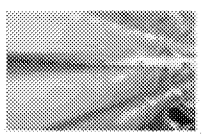


USB3.1C & Power
over Ethernet

PPVE in Industrial Coatings
PTFE (Fine Powder, Dispersion, Granular - Teflon™)

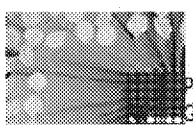


Power Generation
Heat Exchangers



ePTFE Membranes

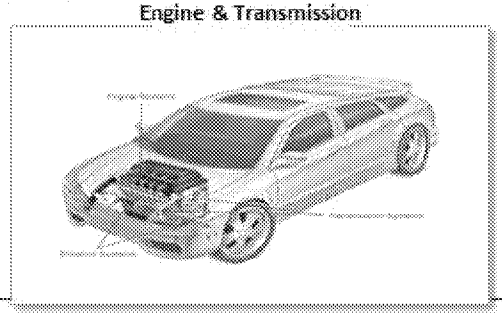
Auto Oxygen Sensor



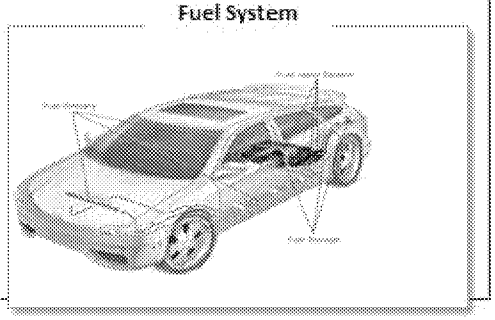
Power
Generation Filtration

PMVE in Viton™ Industrial low temperature grade parts: automotive, aviation, aerospace, gaskets, etc.

Engine & Transmission



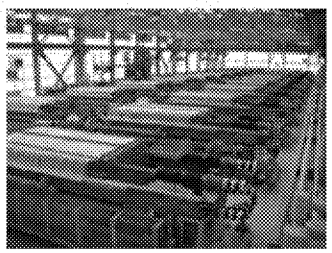
Fuel System



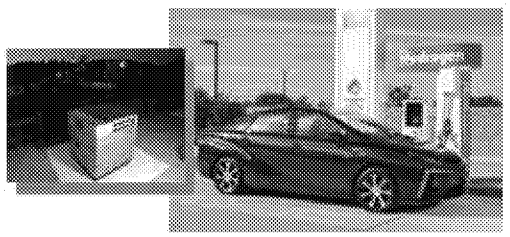
Fayetteville Works
Makes Important Ion Exchange Materials (Nafion™)

Applications

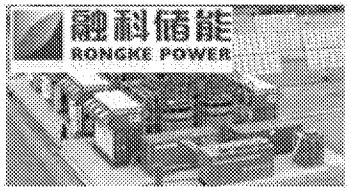
- Chloralkali (Caustic and Chlorine Production)
- Proton Exchange Membrane Fuel Cells
- Portable & Stationary Fuel Cell Power
- Regenerative Fuel Cell or Flow Battery
- Gas Humidification & Dehumidification
- Acid Catalyst



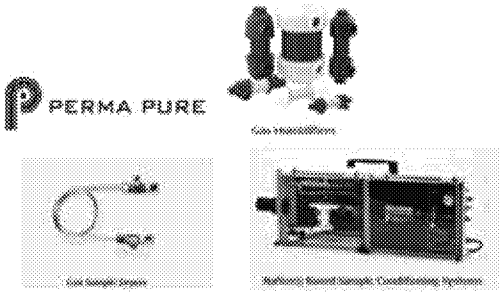
Chloralkali plant

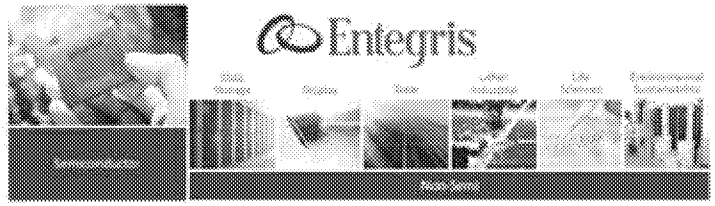


Fuel cell car/ Stationary



Venadium Redox flow Battery (VRB)





Chemours Has Agreed to a Comprehensive and Rigorous Consent Order at Fayetteville Works

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STATE OF NORTH CAROLINA IN THE GENERAL COURT OF JUSTICE
SUPERIOR COURT DIVISION
COUNTY OF BLADEN 17 CVS 580

STATE OF NORTH CAROLINA, *ex rel.*, MICHAEL S. REGAN, SECRETARY, NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY,	)	
Plaintiff,	)	**CONSENT ORDER**
CAPE FEAR RIVER WATCH,	)	
Plaintiff-Intervenor,	)	
v.	)	
THE CHEMOURS COMPANY FC, LLC,	)	
Defendant.	)	

WHEREAS, since July 1, 2015, Defendant The Chemours Company FC, LLC ("Chemours") has owned and operated a chemical manufacturing facility called the Fayetteville Works ("Facility") in Bladen County, North Carolina, which, prior to July 1, 2015, was owned and operated by E. I. DuPont de Nemours & Company, Inc. ("DuPont").

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Chemours Has Agreed to a Comprehensive and Rigorous Consent Order at Fayetteville Works

- The Consent Order was negotiated for more than a year with:
  - The North Carolina Department of Environmental Quality,
  - The North Carolina Attorney General's Office
  - The Cape Fear River Watch ("CFRW"), and
  - CFRW's counsel, the Southern Environmental Law Center.
- The Consent Order was subject to two public comment periods (one before the negotiation and one after).
- As a result of the comments, the State requested and Chemours agreed to further enhancements to the Consent Order.
- On February 20, the State responded to the comments and requested the Court to approve the Consent Order.
- On February 25, the Court held a hearing on the State's motion and approved the Consent Order.

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Chemours Has Agreed to a Comprehensive and Rigorous Consent Order at Fayetteville Works

- The Consent Order:
  - Sets the strictest requirements in the United States for abatement of PFAS compounds, including GenX
  - Will require very substantial investments by Chemours
  - Will result in the virtual elimination of ongoing discharges of PFAS compounds from Fayetteville Works

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Chemours Has Agreed to a Comprehensive and Rigorous Consent Order at Fayetteville Works

- Comprehensive and rigorous standards are set for:
  - Air emissions abatement for GenX and other PFAS
  - Surface water discharges for GenX and other PFAS
  - Groundwater remediation for GenX and other PFAS
  - Replacement of impacted private drinking water supplies
- These efforts will result in the reduction of PFAS discharges from ongoing operations by over 99%.
- The Consent Order also requires Chemours to conduct or fund multiple scientific studies which will be important for advancing PFAS science generally.

ED_005478_00019379-00040

Chemours Has Agreed to a Comprehensive and Rigorous Consent Order at Fayetteville Works

- DEQ has emphasized to the public the comprehensive nature of the resolution and described the Consent Order as follows:
  - "The proposed consent order is a comprehensive resolution regarding per- and polyfluoroalkyl substances (PFAS) contamination originating from Chemours' Fayetteville Works facility. It requires Chemours to dramatically reduce GenX air emissions, provide permanent replacement drinking water supplies and pay a civil penalty to DEQ."

ED_005478_00019379-00041

Chemours Has Agreed to a Comprehensive and Rigorous Consent Order at Fayetteville Works

- Cape Fear River Watch, which is a party to the agreement and will be actively involved in implementation, said:
  - "It requires Chemours to do as much as possible, as quickly as possible, to stop polluting the Cape Fear River. It will result in a cleaner Cape Fear River in the very near future."

ED_005478_00019379-00042

The Consent Order Codifies the Company's Commitment to Virtually Eliminate PFAS in its Air Emissions

- **Commitment:** The Consent Order codifies the Company's commitment to virtually eliminate PFAS in air emissions and to achieve a 99% reduction in GenX emissions from 2017 levels.

- **Thermal Oxidizer**: The centerpiece is the installation of a thermal oxidizer that will achieve a 99.99% destruction efficiency for PFAS in all streams routed to it (essentially all process streams except for PPA, which is controlled by a scrubber and a carbon adsorption unit)
  - The thermal oxidizer is being installed on an extraordinarily expedited schedule to be operational by the end of this year.
  - DEQ is expected to issue the air permit for the thermal oxidizer shortly so construction can proceed.

ED_005478_00019379-00043

The Consent Order Codifies the Company's Commitment to Virtually Eliminate PFAS in its Air Emissions

- **Interim reductions**: DEQ insisted on rigorous interim reductions that will reduce GenX emissions from 2017 levels by 92% for calendar year 2019. This will be accomplished primarily through three technology upgrades already installed in 2018:
  - A carbon adsorption unit to control the indoor air and process emissions at the PPA facility,
  - A second phase scrubber to further control emissions from the Vinyl Ethers North ("VEN") unit after the primary scrubber, and
  - A carbon adsorption unit to control indoor air at VEN and for further control of emissions from the second phase scrubber.

ED_005478_00019379-00044

The Consent Order Codifies the Company's Commitment to Virtually Eliminate PFAS in its Air Emissions

- **Testing and Reporting:** The Consent Order requires extensive emissions testing and reporting to demonstrate compliance.
  - Testing already conducted on the VEN carbon adsorption unit shows a 93.9% efficiency in controlling remaining process emissions.

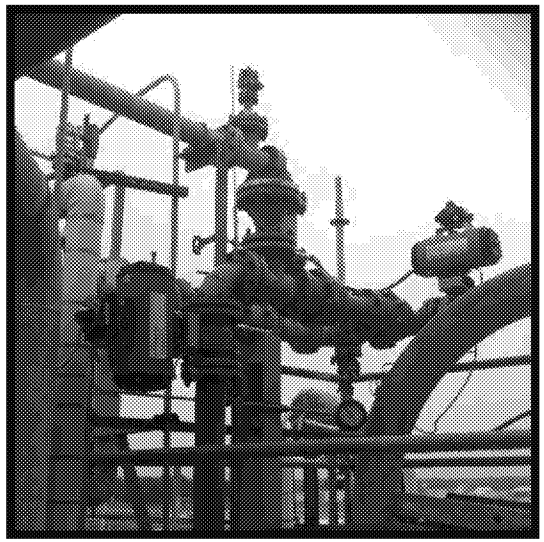
- **Importance:** These controls will have environmental benefits not only for air quality but by reducing air deposition to groundwater, storm water and surface water.

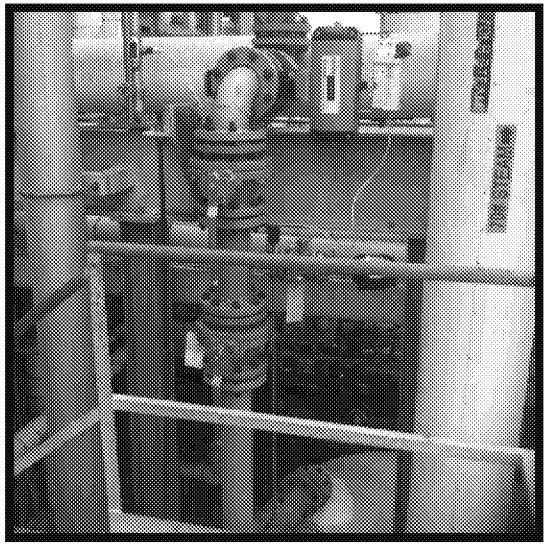
ED_005478_00019379-00045

Chemours Has Installed a Carbon Adsorption Unit to Control Emissions at the PPA Facility

Chemours Has Installed a Carbon Adsorption Unit to Control Emissions at the VEN Facility

Chemours Has Routed the Secondary Scrubber to the VEN Carbon Adsorption Unit



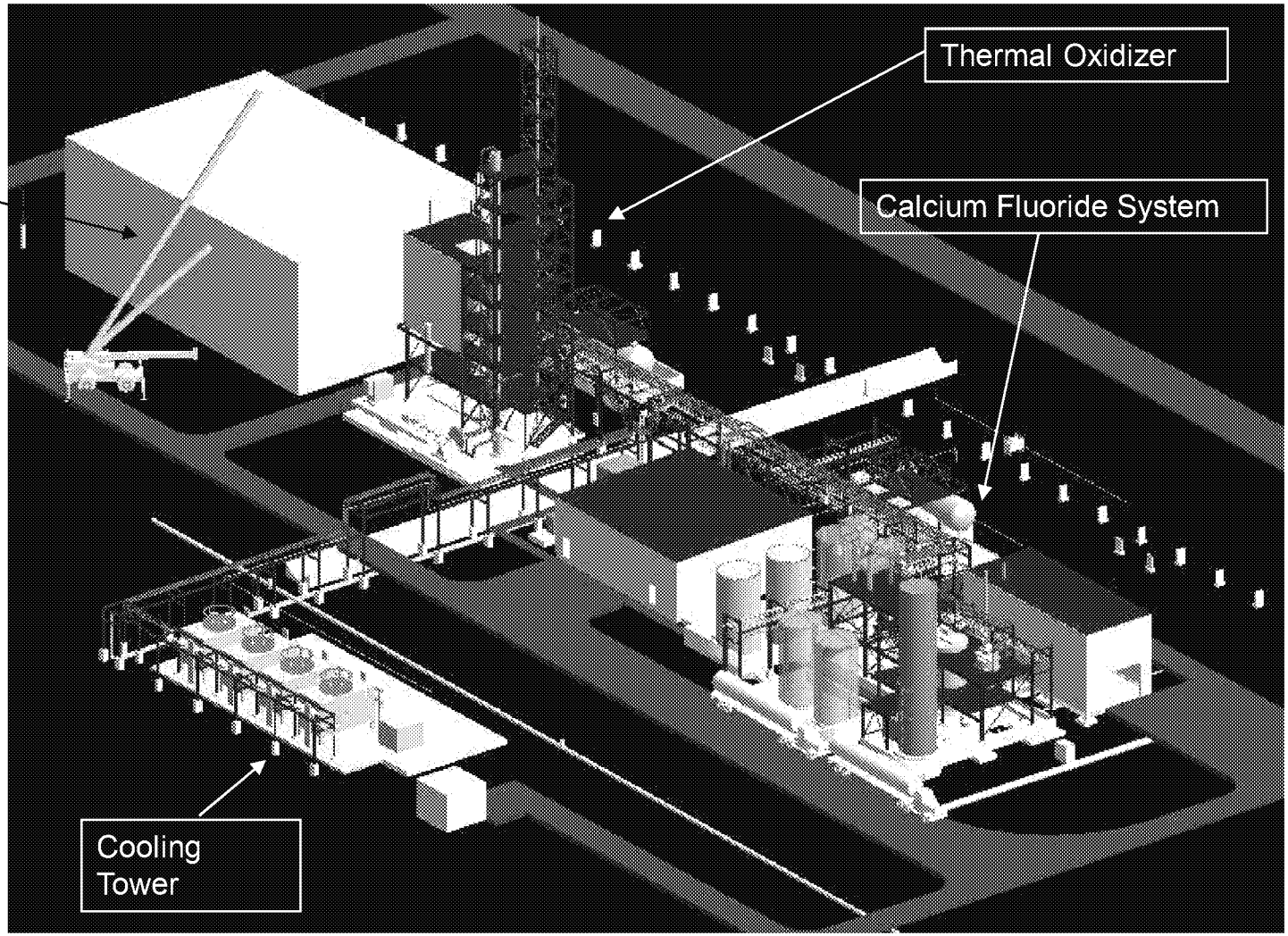


ED_005478_00019379-00048

Chemours Has Commenced Construction of the Thermal Oxidizer

Thermolysis and Water Treatment

The Thermal Oxidizer will sit in a 5 story high structure adjacent to a 8 story high scrubbing system



ED_005478_00019379-00049

The Consent Order Sets Stringent Requirements for Surface Water Protection

- **The Consent Order continues the prohibition of any discharge of process wastewater until a new NPDES permit is issued.**
  - Chemours will continue to capture all process wastewater for offsite disposal until a permit can be obtained.
  - Chemours is developing and installing an array of technologies to address process wastewater on a long term basis and to support its permit application.

ED_005478_00019379-00050

The Consent Order Sets Stringent Requirements for Surface Water Protection

- **Reduction of PFAS Loadings:**
  - The Consent Order also requires Chemours to develop a plan to reduce PFAS loadings from storm water, non-process water, and groundwater over a two- to five-year period.
  - This requirement encompasses development of a model accounting for all sources and mass loadings of PFAS.
  - The Consent Order has an objective of an 80% reduction of loadings of GenX and one other indicator PFAS compound within 2 years.

ED_005478_00019379-00051

Chemours' Process Wastewater Abatement Efforts Have Had Significant Positive Impact

- Starting on June 21, 2017, Chemours began identifying and capturing for off-site disposal various process wastewater streams from within the Nafion® manufacturing area at Fayetteville Works (the "Nafion Area").

- On November 29, 2017, Chemours severed the pipe conveying process wastewater from the Nafion Area to Outfall 002 and the Cape Fear River. This process wastewater is transported and disposed of off-site.

ED_005478_00019379-00052

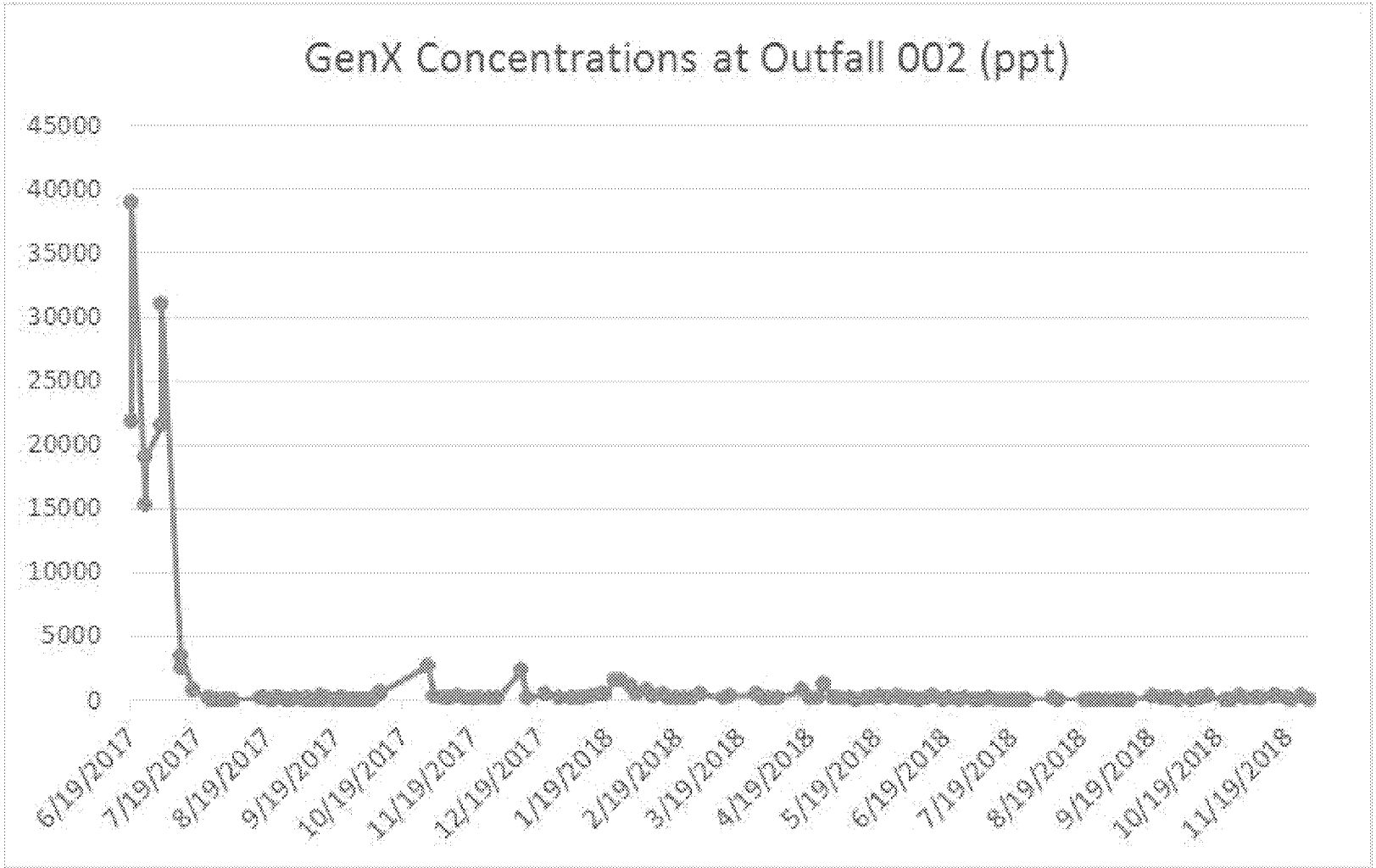
Chemours' Process Wastewater Abatement Efforts Have Had Significant Positive Impact

- These process wastewater abatement efforts have collectively reduced GenX concentrations at Outfall 002 by over 99%, and as a result, sampling at all downriver drinking-water intake sites has consistently shown GenX concentrations below 140 ppt since November 2017.

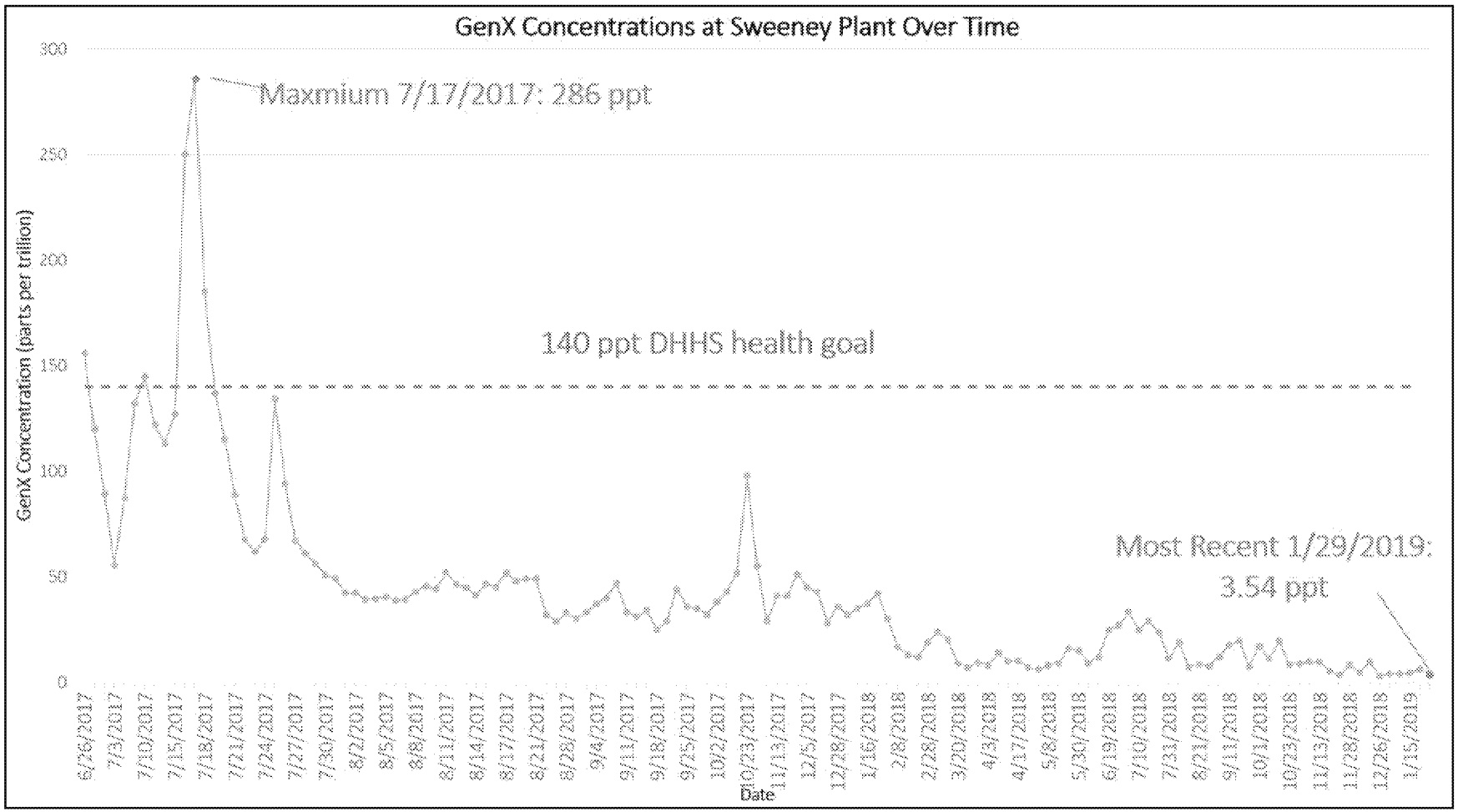
- In cooperation with NC DEQ, Chemours has been investigating the sources of the residual GenX at Outfall 002 since the process wastewater discharge ceased, and it will continue to investigate and address that under the Consent Order.
  - Among the potential sources of such discharge are stormwater runoff, non-contact cooling water, groundwater infiltration, residual contamination in the wastewater treatment plant and other facility locations, and air deposition.

ED_005478_00019379-00053

Chemours' Process Wastewater Abatement Efforts Have Had Significant Positive Impact

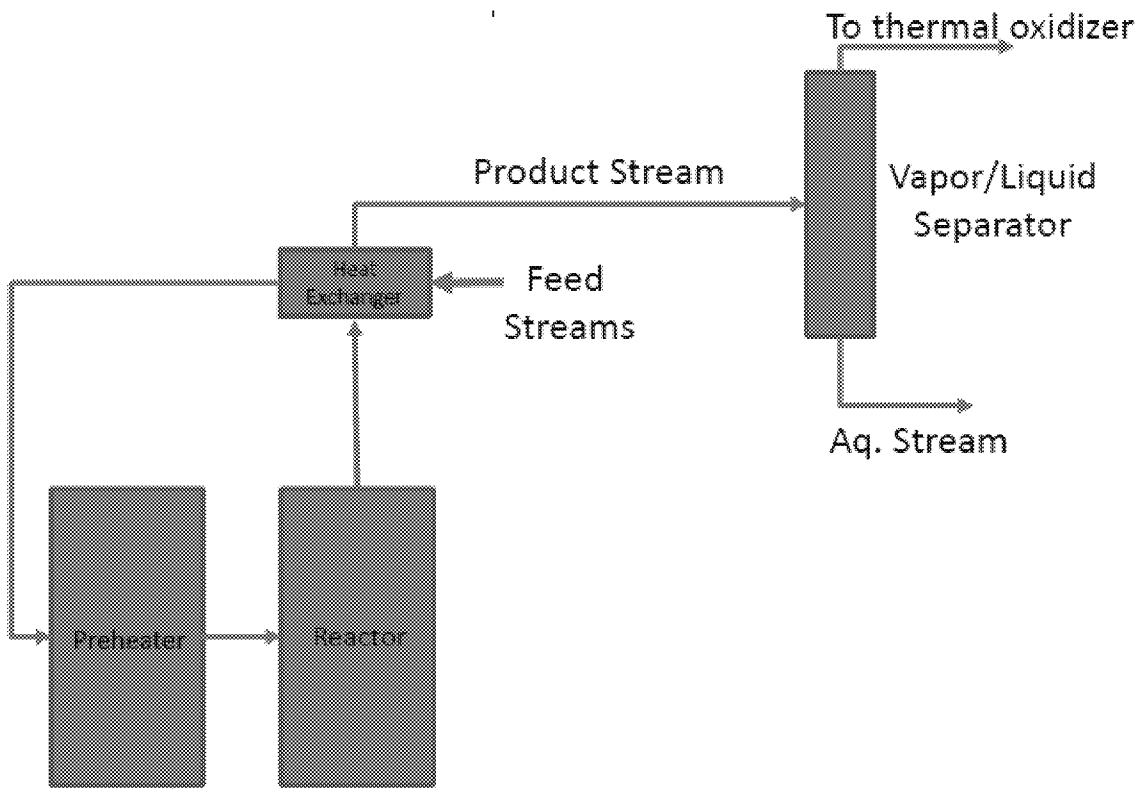


Chemours' Process Wastewater Abatement Efforts Have Had Significant Positive Impact



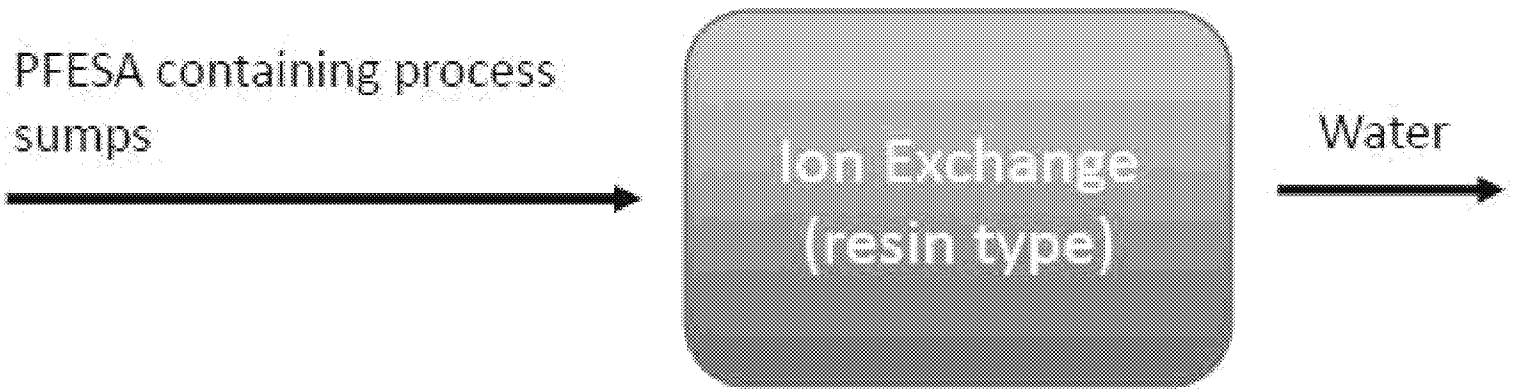
Chemours is Developing An Array of Technologies to Address Process Wastewater on a Long Term Basis

- **Thermolysis** - Heating PFECAs in water at temperatures of 150ºC-250ºC results in decarboxylation and/or mineralization.



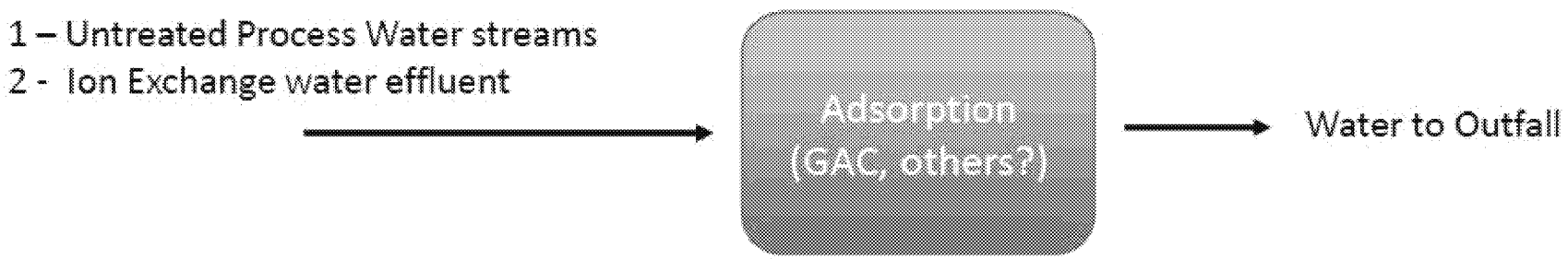
Chemours is Developing An Array of Technologies to Address Process Wastewater on a Long Term Basis

- **Ion Exchange -** Uses an insoluble anion exchange resin to capture/trap the ionic PFECAs and PFESAs.



Chemours is Developing An Array of Technologies to Address Process Wastewater on a Long Term Basis

- **Aqueous Adsorption -** Uses granular activated carbon to remove soluble substances from water.



The Consent Order Requires Comprehensive Groundwater Remediation

- **Commitment:** The Consent Order requires the development and implementation of an on and offsite assessment and then a corrective action plan in conformance with State regulations to address and remediate groundwater.
- **Objective:** The corrective action plan needs to require at least a 75% reduction in PFAS loading to surface water from baseline groundwater conditions.

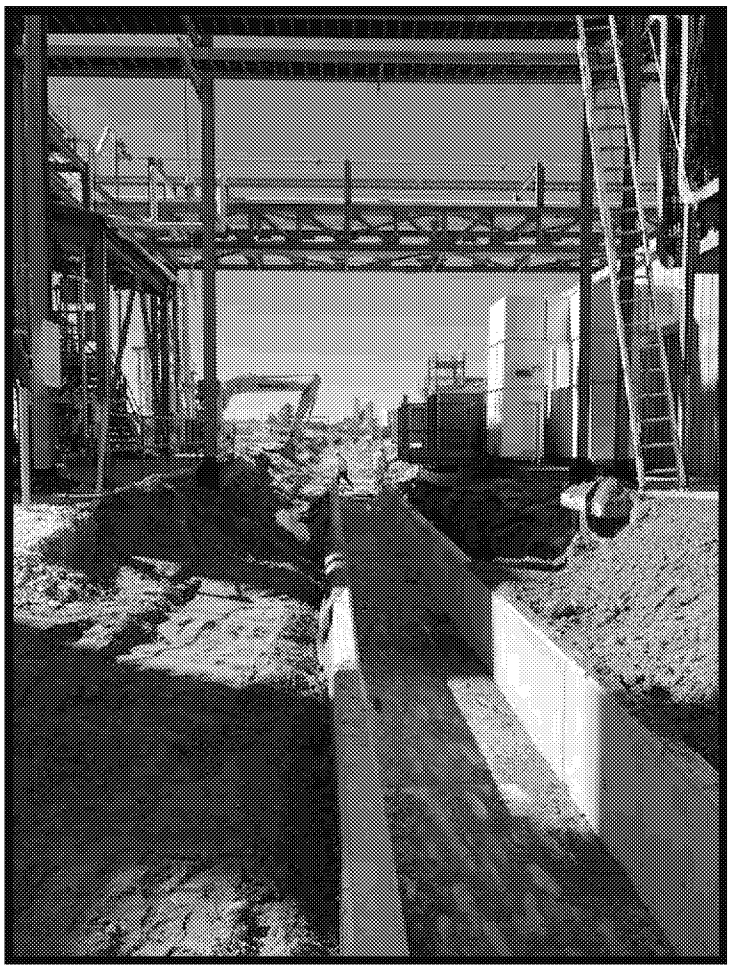
ED_005478_00019379-00059

The Consent Order Recognizes that Chemours Has Already Taken Significant Actions to Address Groundwater

- **Accomplishments to date:** As shown in the following photos, Chemours has lined a number of large previously unlined features, which will reduce infiltration of water to the perched zone which overlays the two other aquifers at the facility.

ED_005478_00019379-00060

Completed - Redesign & Lining of the Cooling Water Channel

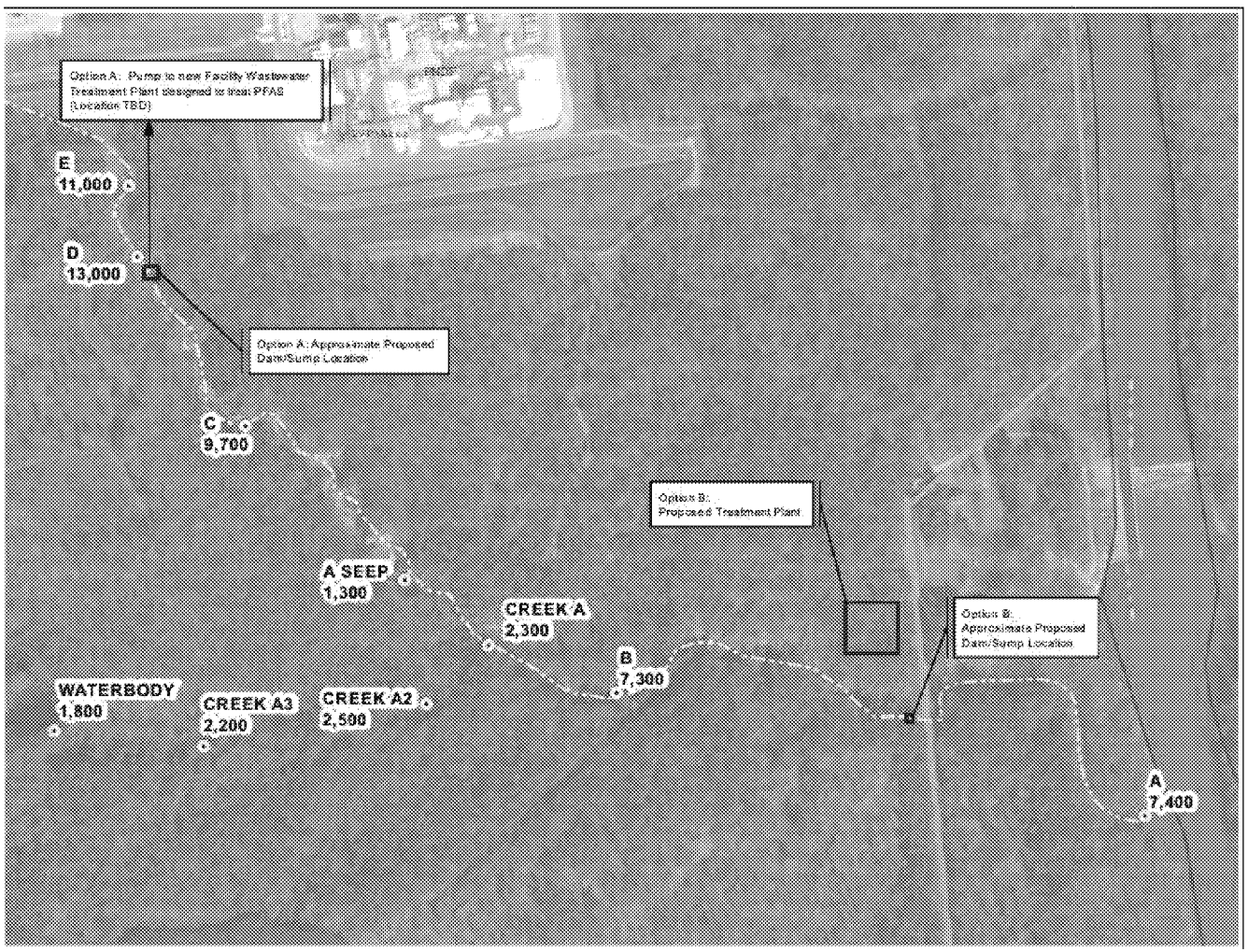


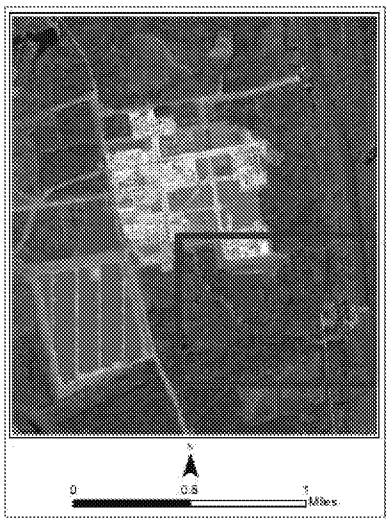
Completed - Redesign & Lining of the Cooling Water Channel

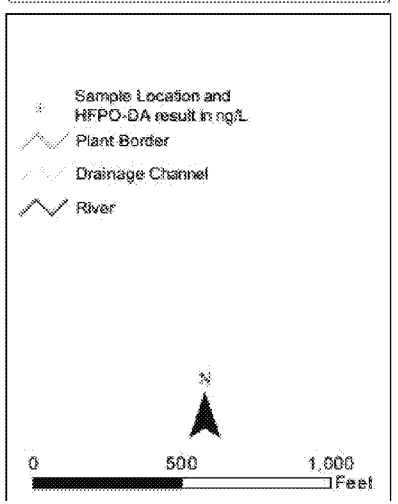
Completed - Redesign & Lining of the Sediment Basins

Completed - Redesign & Lining of the Sediment Basins

Work to Remediate Old Outfall 002 Is Underway







Old Outfall 002 Will Be Addressed Expeditiously

- The Old Outfall 002 channel has been identified as a significant source of PFAS loading to the Cape Fear River.
- The Consent Order requires Chemours to capture and treat the flow in the channel by September 2020.
  - Significant expansion in project scope from initial Consent Order

ED_005478_00019379-00066

The Consent Order Requires Chemours to Provide Replacement Drinking Water Supplies to Private Wells

- For wells found to have water above the State's provisional health goal of 140 ng/L (ppt) for GenX, or any applicable health advisory, affected parties have the choice of the following, to be paid for by Chemours:
  - Connection to a public water supply, unless that is cost prohibitive
  - Installation of a whole building filtration system
  - Installation of under sink reverse osmosis systems at every kitchen and bathroom sink

ED_005478_00019379-00067

The Consent Order Requires Chemours to Provide Replacement Drinking Water Supplies to Private Wells

- For wells above 10 ng/L for any individual PFAS identified in the Consent Order, or 70 ng/L for PFAS in the aggregate, affected parties may receive up to three under sink reverse osmosis systems. The 10 and 70 ng/L standards are not tied to any health standard.
- Affected parties will receive bottled water until their systems are installed or connected.
- Chemours will test drinking water wells within a ¼ mile of the nearest well with detectable PFAS levels.
- Chemours will maintain filtration systems for at least 20 years (and longer if any health standard is exceeded).

ED_005478_00019379-00068

The Consent Order Requires Chemours to Conduct Toxicity Studies on Five PFAS Compounds

- **Toxicity Studies:**
  - 28-day oral immunotoxicity study in rats
  - 28-day oral immunotoxicity study in mice
  - 90-day repeated dose oral toxicity study in rats
  - 90-day repeated dose oral toxicity study in mice

- **Ecological Toxicity Studies:**
  - Algal acute (72-hour growth) toxicity study
  - Daphnid acute toxicity study
  - Daphnid chronic (reproduction) toxicity study
  - Fish acute toxicity study
  - Sediment 10-day freshwater invertebrates toxicity test

ED_005478_00019379-00069

The Consent Order Requires Chemours to Conduct Analytical Chemistry Studies

- **Non-targeted analysis** – Study of "all process and non-process wastewater and stormwater streams to identify any additional PFAS and developing test methods and lab standards for such compounds"

- **Total organic fluorine** – Development of "sampling and analytical methodology for the measurement of Total Organic Fluorine in process air emissions and process wastewater"

ED_005478_00019379-00070

The Consent Order Requires Chemours to Conduct Remediation-Related Studies

- **Fate and transport** – Analysis of "fate and transport of identified PFAS originating from the Facility in air, surface water and groundwater"

- **Sediments** – Analysis of "the nature and extent of PFAS sediment contamination in the Cape Fear River originating from the Facility"

ED_005478_00019379-00071

Chemours Will Pay a Substantial Civil Penalty and Is Subject to Significant Stipulated Penalties

- Chemours will pay a civil penalty of $12 million
  - This is the largest civil penalty in the history of NC DEQ
- Chemours will reimburse DEQ investigative costs of $1 million
- Chemours is subject to detailed and significant stipulated penalties for noncompliance

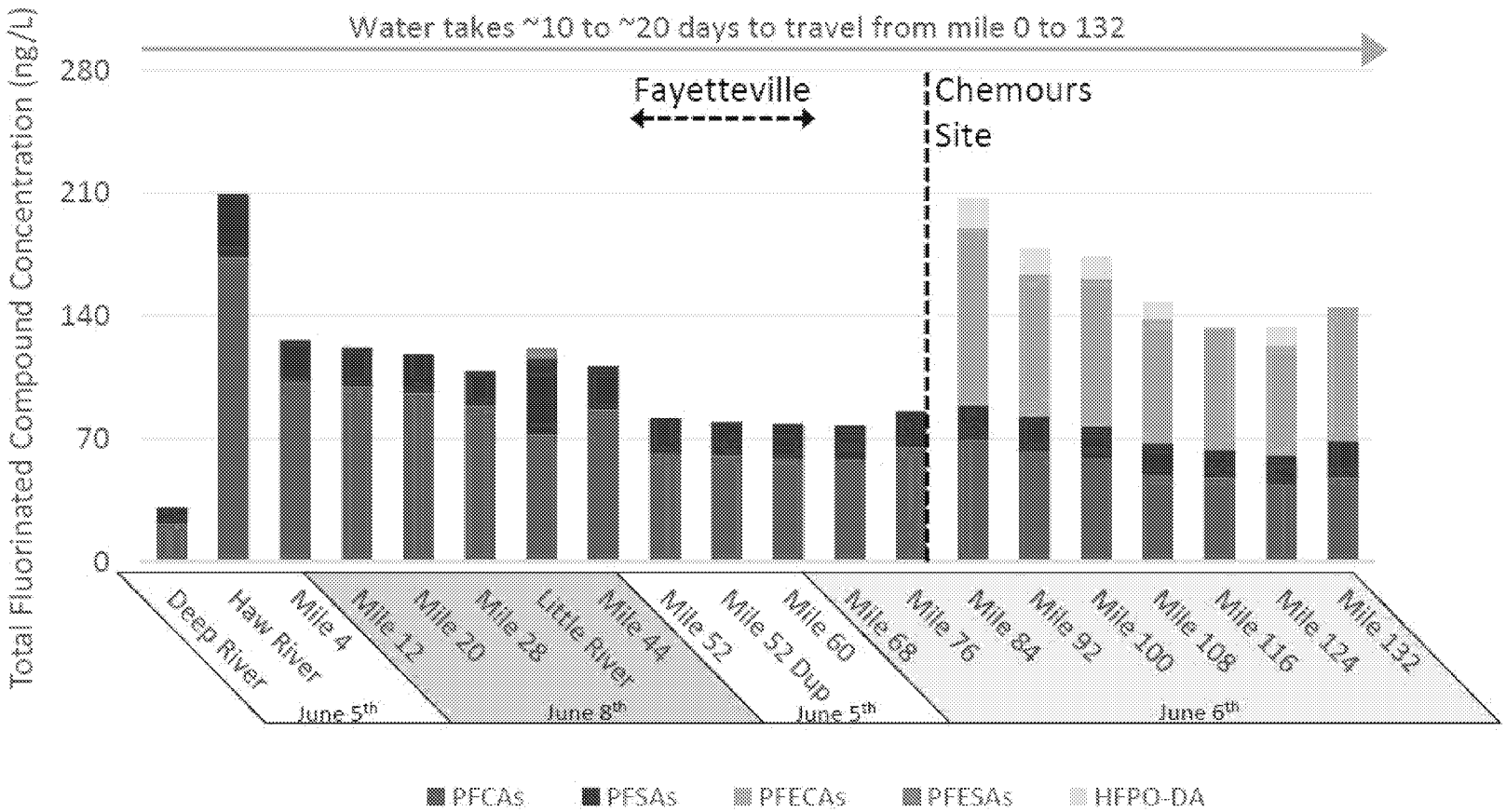
ED_005478_00019379-00072

Substantial PFAS Loadings in the Cape Fear River Are Not From Fayetteville Works

- Chemours has conducted three river investigations to
  - Assess PFAS spatial distributions
  - Assess PFAS chemical distributions
  - Understand which PFAS are from Fayetteville Works
  - Assess GenX reductions in the river

ED_005478_00019379-00073

Substantial PFAS Loadings in the Cape Fear River Are Not From Fayetteville Works



ng/L – nanograms per liter, equivalent to ppt (part per trillion) * Dup – Duplicate sample

ED_005478_00019379-00074

Substantial PFAS Loadings in the Cape Fear River Are Not From Fayetteville Works

- Multiple environmental factors impact the river, including PFAS. PFAS are present throughout the entire watershed.

- Based on Chemours' collected data, approximately half of the detected PFAS mass at Kings Bluff Intake (CFPUA's water source) are from other sources along the length of the river. The other half of the detected PFAS mass are from Fayetteville Works.
  - PFCAs and PFSAs are associated with other sources.
  - GenX, PFECAs and PFESAs are associated with Fayetteville Works.

ED_005478_00019379-00075

Proposed Agenda

- Chemours' History and Products
- Chemours' Commitment to Sustainability
- Comprehensive Consent Order Agreed to in Fayetteville
- **Chemours' Historic GenX Operations Have Been Legal and Appropriate**
- TSCA NOV Issues Are Being Addressed
- Washington Works – Status and Progress
- Chambers Works – Status and Progress
- Update on Fluorochemical Facilities
- Other Issues, Including CWA Section 308 Responses
- Discussion and Next Steps

ED_005478_00019379-00076

Chemours' Historic GenX Operations Have Been Legal and Appropriate

- Although the State alleged that prior discharges of GenX by Chemours were non-compliant, the Consent Order contains no admission of liability.

> 42. No Admission: By agreeing to entry of this Consent Order, Chemours makes no admission of law or fact with respect to the allegations in the Complaint or Amended Complaint, any Notices of Violation, or the proposed findings of fact or conclusions of law filed by DEQ in connection with prior motions or status reports, and does not admit to any other factual or legal determination, and denies any non-compliance or violation of any law, regulation or permit referenced therein or in this Consent Order.

- In fact, under the relevant facts and applicable law, those discharges were authorized by the facility's NPDES permit.

ED_005478_00019379-00077

Piney Run's Two-Pronged Test

An "NPDES permit . . . shield[s] its holder from liability under the Clean Water Act as long as"

1. "the permit holder complies with the express terms of the permit and with the Clean Water Act's disclosure requirements" <u>and</u>

2. "the permit holder does not make a discharge of pollutants that was not within the reasonable contemplation of the permitting authority at the time the permit was granted."

Piney Run Preservation Ass'n v. *Cty. Comm'rs of Carroll Cty., Md.*, 268 F.3d 255, 259 (4th Cir. 2001)

ED_005478_00019379-00078

Clean Water Act — Legal Framework

1. Fourth Circuit has made clear that "reasonable contemplation" includes not only what the permitting authority actually knew, but what it had reason to anticipate.

2. Fourth Circuit has also made clear that reasonable contemplation is not limited to the permit application itself.

3. *Piney Run*'s second prong would make no sense if there were a requirement to identify every compound in the permit application or to sample for and then identify every compound.

ED_005478_00019379-00079

1985 Letter Made Clear that the Nafion® Area Discharged "Totally Fluorinated Organics"

"Nafion® Manufacturing Waste Characteristics

The Nafion® Manufacturing Area is a complex of relatively small scale operations for the production of intermediate fluorochemicals and polymers for the production of Nafion® electrolytic membranes and other fluorocarbon polymers. **Contaminants in the wastewater include inorganic fluorides, totally fluorinated organics (which are not biodegradable) and biodegradable organics."**

"This stream, when neutralized, contains – and can only contain – inorganic potassium fluoride and **totally fluorinated organic salts** which have no BOD or COD and therefore currently pass through the biofacilities without degradation."

E. I. DU PONT DE NE
P. O. DR
FAYETTEVILLE,

Paul Wilms, A
Division of E
N.C. Departme
and Commun
P.O. Box 2768
Raleigh, N.C.

Dear Mr. Wilm

At t
Noland, I am
wastewater discharge change proposed for the Du Pont Fayetteville

scrub
Nafion® Area
current practice o
outfall via the plant bio
independently discharge a single
tly to the outfall in place of the
and discharging this stream to the
ent facility in common with all other
plant process wastewaters. This stream, when neutralized, contains
and can only contain – inorganic potassium fluoride and totally
fluorinated organic salts which have no BOD or COD and therefore
currently pass through the biofacilities without degradation.
Therefore, combined outfall stream 002 (after the junction of our
cooling water and biopond discharges in our waste area) will be
identical to the current composition. (Attachment 1) Proposed
revisions of the two Fayetteville Works waste schematics which were
submitted in 12/81 with the NPDES renewal application are shown as
attachments 2A and 2B.

There's a world of things we're doing something about

DEQ-CFW_00061777

the

* Nafio Waste Characteristics

The Nafion® Manufacturing Area is a complex of relatively small scale operations for the production of intermediate fluorochemicals and polymers for the production of Nafion® electrolytic membranes and other fluorocarbon polymers. Contaminants in the wastewater include inorganic fluorides, totally fluorinated organics (which are not biodegradable) and biodegradable organics.

Process details, waste constituents, etc. were discussed in communications and meetings of Du Pont personnel with Division of Environmental Management personnel in Fayetteville and Raleigh in 1975 and 1976. Pilot studies of the Nafion® wastewater were made by Du Pont and submitted to confirm compatability with the existing Fayetteville Works biofacilities and to confirm non-toxicity of the outfall in support of technical studies by the Department of Natural Resources. As a result, NPDES Permit NC0003573 was issued on 10/13/77 permitting the construction and operation of the Nafion® facilities. (Also air permit 3339 was initially issued on 12/13/76).

All scrubber, sump and other contact aqueous wastes from Nafion® facilities go through a single neutralization facility to the plant biopond except for a very small non-BOD discharge from a nitric acid neutralizer which is allowed to discharge to the cooling water directly because of the detrimental effects of nitrate on biopond clarifier operation. In addition, all routine chemical area process vents discharge by a single manifold into a common caustic scrubber.

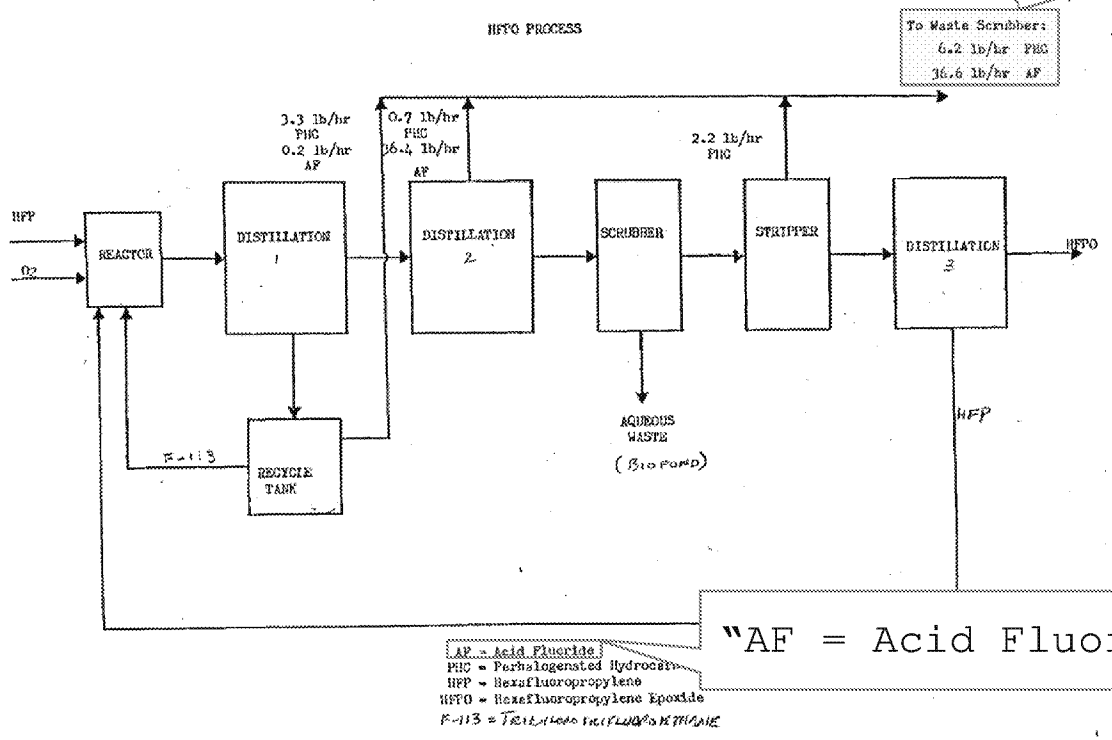
DEQ-CFW_00061778

1985 Letter Made Clear that the Nafion® Area Generated "Acid Fluorides" that Were Sent to WWTP

"To Waste Scrubber:
6.2 lb/hr PHC
36.6 lb/hr AF"

ATTACHMENT 3

HFPO PROCESS



"AF = Acid Fluoride"

AF = Acid Fluoride
PHC = Perhalogenated Hydrocarbon
HFP = Hexafluoropropylene
HFPO = Hexafluoropropylene Epoxide
F-113 = Trichlorotrifluoroethane

1987 Permit Added a Discharge Limit for Fluoride

A. EFFLUENT LIMITATION AND MONITORING REQUIREMENTS

During the period beginning on the effective date of the permit and lasting until expiration, the permittee is authorized to discharge from outfall(s) serial number(s) 002 (Cooling Water and Nafion Wastewater) Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	Discharge Limitations				Monitoring Requirements		
	kg/day (lbs/day)		Other Units (Specify)		Measurement	Sample	*Sample
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.	Frequency	Type	Location
Flow					Continuous	Recording	I or E
Temperature			**	**	Daily	Grab	E
BOD, 5Day, 20°C					Quarterly	Composite	E
COD					Quarterly	Composite	E
Fluoride ****	3476(7663)	3476(7663)			Weekly	Composite	E

THERE SHALL BE NO CHROMIUM, ZINC, OR COPPER ADDED TO THE COOLING W

Fluoride **** 3476(7663) 3476(7663) Weekly Composite E

****The sample for fluoride must be taken downstream of the 001 discharge, unless or until, all neutralized Nafion Area streams are discharged entirely into the cooling water outfall 002.

The permittee shall obtain authorization from the Division of Environmental Management prior to utilizing any biocide in the cooling water (See Part III of this Permit).

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored daily at the effluent by grab samples

There shall be no discharge of floating solids or visible foam in other than trace amounts.

1996 Letter — DuPont Informed DEQ About the Discharge of Fluorocarbon Compounds

DuPont Automotive

"This letter is to provide you information to modify the referenced NPDES Permit to allow for the non-biodegradable Nafion® process wastewater to be discharged directly to Outfall 002, thereby bypassing the site's Wastewater Treatment Plant (WWTP) . . ."

Dear Mr. Nizich,

This letter is to provide you information to modify the referenced NPDES Permit to allow for the non-biodegradable Nafion® process wastewater to be discharged directly to Outfall 002, thereby bypassing the site's Wastewater Treatment Plant (WWTP), or to be discharged to the WWTP as is done currently.

The reason for this requested modification is that future expansions of the Nafion® area will unnecessarily increase the hydraulic loading to the WWTP, with no benefit to the environment by treating the non-biodegradable wastewater in the WWTP.

Enclosed are two updated wastewater flow diagrams which should replace the current diagrams submitted with the NPDES Permit Renewal Application. These updated flow diagrams show the two alternate routes for the non-biodegradable Nafion® process wastewater.

SUMMARY

DEQ-CFW_00077007

Mr. Gregory Nizich
NC DEHNR
March 15, 1996

Page 3

1) The Nafion® HFPO Process Scrubber normal daily flow = 5,330 gal/day
2) The Nafion® Waste Gas Scrubber normal daily flow = 5,760 gal/day
3) The Outfall 002 low flow condition = 11.83 MGD

The contribution of the two process streams to Outfall 002's flow is obviously very small.

All physical analyses were performed on the undiluted scrubber effluents.

The 48-hr acute toxicity testing was performed on process samples diluted with laboratory water to a concentration representative of the ratio of normal process flow(s) to Outfall 002 low flow. No additional dilution was taken for the dilution effect of the Cape Fear River.

The 7-day chronic bioassay testing was performed on process samples diluted with Outfall 002 composite effluent to a concentration representative of the ratio of normal process flow(s) to Outfall 002 low flow. The bioassay testing was then performed at both a 3.3% dilution (the test concentration specified on our NPDES Permit) and at a 6.6% dilution (twice the concentration specified on our NPDES Permit).

PHYSICAL TESTING RESULTS

The results of the physical analytical testing of the scrubber effluents are presented in Table 1.

Both the HFPO Process Scrubber and Waste Gas Scrubber effluents exhibit no measurable level of BOD_5. This is expected since the Nafion® manufacturing area produces only fluorocarbon compounds which should be totally non-biodegradable. The absence of BOD_5 material supports our request to allow this material to bypass the WWTP.

DEQ-CFW_00077011

"[T]he Nafion® manufacturing area produces only **fluorocarbon compounds which should be totally non-biodegradable**. The absence of BOD_5 material supports our request to allow this material to bypass the WWTP."

1996 Memorandum Subsequently Allowed Discharge to Bypass Wastewater Treatment Plant

"This office has reviewed the request of DuPont to bypass the WWTP with the Nafion HFPO Process Scrubber and Waste Gas Scrubber discharges to the wood-lined ditch at the Fayetteville Works site."

"The data submitted indicates no appreciable pollutants of concern . . ."

"Should any toxicity test fail or OCPSF value show exceedence [sic] then increased monitoring and a re-evaluation of the constituents of the discharge should be required as a permit condition."

****
****

DIVISION OF ENVIRONMENTAL MANAGEMENT
FAYETTEVILLE REGIONAL OFFICE
April 17, 1996

****
****

M E M O R A N D U M

TO : GREG NIZICH, PERMITS AND ENGINEERING

FROM : Michael C. Wicker, P.E.
Regional Water Quality Supervisor

SUBJECT : E. I. DUPONT
NPDES PERMIT NO. NC0003573
BLADEN COUNTY

This office has reviewed the request of DuPont to bypass the WWTP with the Nafion HFPO Process Scrubber and Waste Gas Scrubber discharges to the wood-lined ditch at the Fayetteville Works site.

The data submitted indicates no appreciable pollutants of concern; however this office concurs that a separate outfall should be established for toxicity and OCPSF monitoring as is currently done on the WWTP discharge.

Should any toxicity test fail or OCPSF value show exceedence then increased monitoring and a re-evaluation of the constituents of the discharge should be required as a permit condition.

If you have any qu[illegible] this matter please contact me at (910) 486-1541.

RECD BY CENTRAL FILES

DEQ-CFW_00077666

1996 — DuPont Notified DEQ of Additional Fluorocarbon Discharges

Mr. Gregory Nizich
DEHNR-DEM
June 5, 1996

Page 4

OUTFALL 001 - OCPSF PRIORITY POLLUTANT LIMITS

The Outfall 001 OCPSF Priority Pollutants are from the table contained in 40 CFR 414 Subpart I (§414.91), which lists the parameters in terms of concentration limits to be applied to the process wastewater flow.

It appears that the flow used to determine the mass (lb/day) limit of the OCPSF parameters was 0.832 MGD, although the source of that flow value is not clear.

Mr. Gregory Nizich
DEHNR-DEM
June 5, 1996

Page 5

The fluoride discharge measured at Outfall 002 comes entirely from the Nafion® manufacturing area. With the 250% expansion of the HFPO process, and the subsequent fluorocarbon materials produced from HFPO, there will be a corresponding increase of fluorides at Outfall 002. At this time, there are no economically feasible alternatives of disposal, reclamation, or recycling of the fluoride containing process wastewaters. As part of our continual waste minimization effort, we will seek out means of reducing these fluoride containing wastewater streams, however none are currently foreseen.

Figure 4 shows the [illegible] from 1992 to 1996,

"The fluoride discharge measured at Outfall 002 comes entirely from the Nafion® manufacturing area. With the 250% **expansion of the HFPO process, and the subsequent fluorocarbon materials produced from HFPO, there will be a corresponding increase of fluorides at Outfall 002**. At this time, there are no economically feasible alternatives of disposal, reclamation, or recycling of the fluoride containing process wastewaters."

"the Permittee is authorized to discharge from outfall(s) serial number 002 (boiler blowdown from DuPont oil-fired boilers, boiler blowdown and cooling water tower blowdown from BCH Energy Project, once through cooling water, treated wastewater effluent from Outfall 001, Nafion® low biodegradable process wastewater from Outfall 003, and filter backwash discharge)."

Title 15A Rule .0211(3)(l)(vii), for fluoride (1.8 mg/L) at the 7Q10 flow (791 cfs) of the Cape Fear River, as determined by:

$$\frac{(791\ ft^3/sec)(86{,}400\ sec/day)(62.4\ lb/ft^3)(1.8\ mg/L)}{(1{,}000{,}000\ mg/L)} = 7{,}676\ lb/day\ Fluoride$$

"Therefore, due to the anticipated increase of fluoride discharge, we request that the Outfall 002 Fluoride Daily Maximum limit be changed to 7,676 lb/day. . ."

CENTRAL FILES

DEQ-CFW_00077443

CENTRAL FILES

DEQ-CFW_00077444

September 2000 — DuPont Again Notified DEQ of an Increase in the Discharge of Fluorocarbons

[Fwd: Process Change and Permit Implications]

Subject: [Fwd: Process Change and Permit Imp
Date: Mon, 25 Sep 2000 10:14:19 -0400
From: Tom Belnick <tom.belnick@ncmail.net>
To: Kitty Kramer <Kitty.Kramer@ncmail.net

Kitty- FYI- Let me know if you have any comments. Thanks.

Date: Mon, 25 Sep 2000 10:14:19 -0400

"[T]he Nafion Process (SIC Code 3083) at the DuPont – Fayetteville Works wishes to replace an existing vacuum pump . . ."

Date: Tue, 19 Sep 2000 13:42:03 -0400
From: "Michael E Johnson" <Michael.E.Johnson@USA.dupont.com>
To: Tom.Belnick@ncmail.net

"These are **fluorocarbon compounds** that are currently being sent to the WWTP . . . . The anticipated increase in quantity is **220 lb. per year, or 0.6 lb/day**. **Virtually none of this material will be biodegraded, and will leave the system primarily as water discharged to the Cape Fear River** . . ."

With the new liquid-ring vacuum pump, some of the high boiling fluorocarbon compounds will be condensed by the cooler water in the vacuum pump, and will be ultimately discharged to the WWTP at a flow rate of 1-5 gpm. These are fluorocarbon compounds that are currently being sent to the WWTP, so no new chemicals are being introduced to the system. The anticipated increase in quantity is 220 lb. per year, or 0.6 lb/day. Virtually none of this material will be biodegraded, and will leave the system primarily as water discharged to the Cape Fear River, with some smaller losses as air emissions from the diffused air system of the WWTP.

The closest effluent guideline that I can find that might cover this manufacturing process is 40 CFR 414.40 (Subpart D - Thermoplastic Resins) since this process makes a fluorocarbon resin that is then extruded into a film.

If you need additional information, please contact via response to this email note or call me at 910-678-1155.

Thanks for your help.

Mike

1 of 2 09/27/2000 10:29 AM

DEQ-CFW_00062062

DEQ Considered the Discharge and Decided It Was "No Problem"

Date: Mon, 25 Sep 2000 10:50:34 -0400
From: Kitty Kramer <Kitty.Kramer@ncmail.net>
Organization: NC Dept. of Environmental and Natural Resources
To: Paul Rawls <Paul.Rawls@ncmail.net>

"**I don't have any problem with this. They are well within their permit limitation for fluoride** which is 7919 [pounds per day] and their 12 month average was 657 [pounds per day] with a max of 1637 [pounds per day]."

Date: Wed, 27 Sep 2000 10:31:49 -0400
From: Kitty Kramer <Kitty.Kramer@ncmail.net>
Organization: NC Dept. of Environmental and Natural Resources
To: Tom Belnick <Tom.Belnick@ncmail.net>

"We **have no problem with what is proposed** by DuPont and a review of their DMR data verses [sic] permit limitations for fluoride shows that they are **well within permit limitations so this should not cause any problems**."

ED_005478_00019379-00087

DEQ Told DuPont "Go Ahead"

Date: Wed, 27 Sep 2000 10:41:47 -0400
From: Tom Belnick <tom.belnick@ncmail.net>
To: Kitty Kramer <Kitty.Kramer@ncmail.net>

"I **talked it over with Dave** and **we came to the same conclusion** as you folks did."

Date: Tue, 26 Sep 2000 10:41:21 -0400
From: Tom Belnick <tom.belnick@ncmail.net>
To: Michael E Johnson <Michael.E.Johnson@USA.dupont.com>

"Hey Mike - I **ran this one by Dave.** Our thought is to **go ahead and make the pump change now.** It sounds like a process change, so no ATC would be needed. **We can take another look at the additional fluorocarbons during permit renewal. It doesn't look like they would be limited by either Federal Guidelines or NC water quality standards. At most we might consider monitoring.**"

ED_005478_00019379-00088

January 2002 — DEQ Knew About the Discharge of Unregulated Compounds

PART III - OTHER PERTINENT INFORMATION (continued)

5. Other Special Items:
Please find attached photos of the discharges from the various manufacturing facilities on the DuPont complex. All discharges ultimately go into the Woodlined Ditch which collectively discharge into an effluent channel that discharges to the Cape Fear River.

As you may recall, the Fayetteville Regional Office was notified by DuPont staff that high levels of turbidity was observed entering the Cape Fear River during September 1999. That notification resulted in an onsite visit by Ricky Revels of the FRO. That visit did reveal that areas of the effluent channel had eroded and some channel walls were vertical. During this period of time, the Lock Master at the US Army Corps of Engineers, Lock Number 3, also contacted the Fayetteville Regional Office to report that an extreme amount of sediment and turbid water were entering the River from this point.

This office requests that DuPont provide to the Division a definite plan of action (to be incorporated into this permit or other administrative mechanism) to address this issue. Based on the attached letter forwarded to David Goodrich dated October 20, 2000, the Company asked "the Division of Water Quality to take the needed steps to perform the necessary modeling to determine what, if any, changes would occur to the DuPont-Fayetteville Works NPDES Permit should the final effluent be discharged upstream of Lock and Dam #3." This office has no other

PART III - OTHER PERTINENT INFORMATION (continued)

DuPont facility have the potential to generate toxic compounds not listed in the Permit. Based on requests of DWQ Central Office staff and others, these compounds cannot be readily tested for and reference material on these compounds is not easily acquired.

It is understood that the permittee has requested of the Central Office clarification on Part III C as to when notification is appropriate. Specifically, we ask, is reporting necessary under this Part III C when it is "Calculated" that there is a reasonable potential for a toxic compound to be present in the waste stream or should the permittee report confirmed measured levels of toxic compounds that may not be listed in the Permit? This question is important because some compounds can only (to our knowledge) be detected with analytical procedures developed by DuPont and even then can only be measured down to the parts per million level.

We request that this issue be outlined in the cover letter of the new Permit or in a separate letter forwarded from the Central Office (if not previously forwarded to the permittee) to officially address the question and enable this office to better enforce the NPDES Permit.

This matter is of particular importance when considering the complex nature of the wastestream and various uses of the Cape Fear River.

"During this emergency event, it became apparent to this office that **various processes and interaction of processes at the DuPont facility have the potential to generate toxic compounds not listed in the [DuPont] Permit**. . . . It is understood that **the permittee has requested of the Central Office clarification on Part III C as to when notification is appropriate** . . . . We request that this issue be outlined in the cover letter of the new Permit or in a separate letter . . . to officially address the question . . . ."

This matter is brought forth in this re[illegible] of Part III C. of the NPDES Permit. This portion of the Permit requi[illegible]ify the Permit Issuing Authority as soon as it knows or has reason to believe" any toxic pollutant which is not limited in the Permit will exceed various thresholds outlined in the Permit. During this emergency event, it became apparent to this office that various processes and interaction of processes at the

ED_005478_00019379-00089

April 2002 — DuPont Again Asked for Guidance About Disclosing the Fluorocarbon Discharges

DuPont Fluoroproducts
22828 NC Highway 87 W
Fayetteville, NC 28306-7332

DUPONT
DuPont Fluoroproducts

MET

April 23, 2002
- hand delivered -

Mr. David Goodrich
NCDENR – Division of Water Quality
Water Quality Section – NPDES Unit
1617 Mail Service Center
Raleigh, NC 27699-1617

SUBJECT: Changes in Discharges of Toxic Substances
NPDES Permit No. NC0003573

Dear Mr. Goodrich:

This letter requests that your office clarify a requirement found in Part III of the subject North Carolina issued NPDES permit.

The DuPont Company – Fayetteville Works facility manufactures many fluorocarbon compounds. Each of these processes creates a wastewater that is ultimately treated in and discharged from the on-site wastewater treatment plant (WWTP).

As with all chemical processes, side reactions to the desired product reaction create dozens or hundreds of byproducts in very low concentrations. The fluorochemistry involved in this processes is exceptionally complicated, and most of the byproducts are unknown compounds. There is no standard method to identify these compounds, so a research methodology utilizing nuclear magnetic resonance (NMR) spectroscopy must be employed by an on-site DuPont chemist to qualify and quantify an unknown fluorocarbon compound.

DuPont is considering a research effort to identify and quantify some of the unknown fluorocarbon byproducts in the various processes at the Fayetteville Works facility. Samples would be taken from the wastewater discharge nearest to the process so as to maximize the possibility of a detectable concentration.

In Part III(C) of the subject NPDES permit, there is a requirement for the permittee to notify the Division of Water Quality "as soon as it knows or has reason to believe… that an activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed… one hundred micrograms per liter (100 µg/L)".

The question to the Division is whether or not the subject permit requires, pursuant to Part III(C), reporting of compounds that are detectable only in the discharge of the manufacturing process, and that would not be detectable exiting the site's WWTP?

E.I. du Pont de Nemours and Company

Printed on Recycled Paper
Pt. 4 Rev. 6/99

DEQ-CFW_00076310

"[The] Fayetteville Works facility manufactures **many fluorocarbon compounds**. Each of these processes creates a wastewater that is ultimately treated in and discharged from the on-site wastewater treatment plant (WWTP).

As with all chemical processes, side reactions to the desired product reaction create **dozens or hundreds of byproducts in very low concentrations**. The fluorochemistry involved in this process is exceptionally complicated, and most of the byproducts are unknown compounds. There is no standard method to identify these compounds . . .

The question to the Division is whether or not the subject permit requires, pursuant to Part III(C), reporting of compounds that are detectable only in the discharge of the manufacturing process, and that would not be detectable exiting the site's WWTP?"

August 2010 Meeting — GenX Discharge Was Disclosed

- At the end of the August 26, 2010 meeting with DEQ, Jenny Liu told DEQ:

  1. Fayetteville Works had determined that GenX was being discharged into the Cape Fear River from a separate part of the facility than the PPA Unit;

  2. DuPont was working on a plan to address this separate discharge; and

  3. DuPont would get back to DEQ with its plan.

ED_005478_00019379-00091

DuPont's Key Disclosures at the June 2015 DEQ Meeting

1. DuPont was the source of the GenX Dr. Strynar identified in the Cape Fear River, but it did not come from the PPA Unit.

2. The GenX detected by Dr. Strynar was likely being generated as a byproduct in the wastestream discharge from the Vinyl Ethers North operation within the Nafion® Manufacturing Area.

3. DuPont installed gas permeators at Vinyl Ethers North in the fall of 2013, which eliminated a wastestream that was understood to be a significant source of the GenX discharge.

ED_005478_00019379-00092

DEQ's Notes — DuPont Confirmed It Was the Source of Dr. Strynar's Findings

6/24/15

- EPA CHEMIST MARK STRYNAR FOUND 2 COMPOUNDS IN CAPE FEAR THAT ARE COMING FROM DUPONT. STUDY PUBLISHED SOON.
- THEY (DUPONT) ARE LETTING US KNOW THEY KNOW SO AS TO HEAD OFF ANY SURPRISES FOR US.

...ASS" ANNUAL MEETING (CONFERENCE)

6/24/15

...AMOURS COMPANY

...ONATED COMPOUNDS

...ST MARK STRYNAR FOUND 2 COMPOUNDS IN CAPE FEAR THAT ARE COMING FROM DUPONT. STUDY PUBLISHED SOON.
- THEY (DUPONT) ARE LETTING US KNOW THEY KNOW SO AS TO HEAD OFF ANY SURPRISES FOR US.

- HFPO PROCESS ~~0.4 ug/L~~ NO LONGER USED
  DIMER ACID
- CAS 39492-90-5 C3 DIMER ACID
  - DUPONT CHECKING EFFLUENT - NOT SEEN AT 0.4 ug/L, ASSUMING IT IS LOWER THAN THAT IN EFFLUENT
  (1 LEVEL THRESHOLD)
- 1.5 ug/day BASED ON THRESHOLD OF TOXICOLOGICAL CONCERN

AS LEVELS CRAMER I, II, III
ex NO CLA CRAMER CLASS I = ASPARTAME
↓
CLASS III ~~[illegible]~~
~~[illegible]~~ CRAMER CLASS [FOR MATERIALS]
NO CLASSIFICATION (NC) - LEAST CONCERN
↓ ↓
LEVEL I → MOST CONCERN

END RESULT:
- WE KNEW MORE ABOUT THIS THAN DUPONT DID. WE PROVIDED THEM REFERENCE MATERIALS.

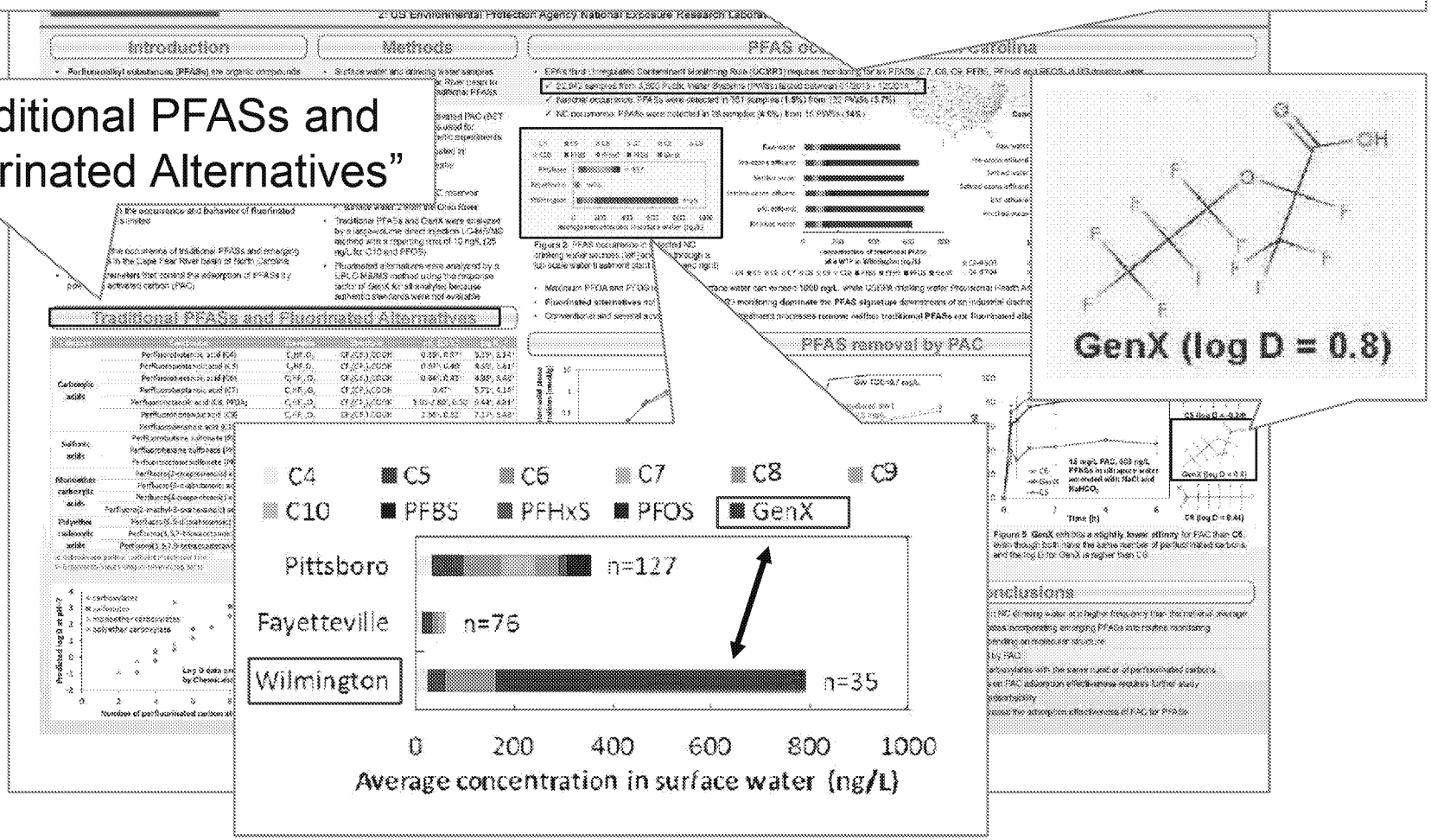
END RESULT:
- WE KNEW MORE ABOUT THIS THAN DUPONT DID. WE PROVIDED THEM REFERENCE MATERIALS.
- WE ARE AWAITING THE PUBLISHING OF DR. STRYNARS PAPER TO SEE WHAT THEY FOUND, WHERE THEY FOUND IT, HOW MUCH THEY FOUND AND METHODS USED.

DEQ-CFW_00074884

GenX and other PFASs Clearly Identified in Cape Fear River

"**22,942 samples** from 3,605 Public Water Systems (PWSs) tested between **01/2013-12/2014**"

"Traditional PFASs and Fluorinated Alternatives"



September 29, 2015 — Chemours Sent Dr. Strynar's Paper to DEQ

September 29, 2015 9:53 AM

From: JOHNSON, MICHAEL E.
Sent: Tuesday, September 29, 2015 9:53 AM
To: Brower, Connie (connie.brower@ncdenr.gov); Tom Belnick (tom.belnick@ncdenr.gov)
Subject: Mark Strynar Publication
Attachments: Strynar Environ Sci & Tech 2015.pdf; Strynar Environ Sci & Tech Supplement.pdf

Connie and Tom:

I hope you are both well. In case you have not seen it, attached is the publication by Mark Strynar.

Mike

Michael E. Johnson, PE
Environmental Manager
Chemours Company – Fayetteville Works
(910) 678-1155

Chemours

The Chemours Company FC, LLC
22828 NC Highway 87 W

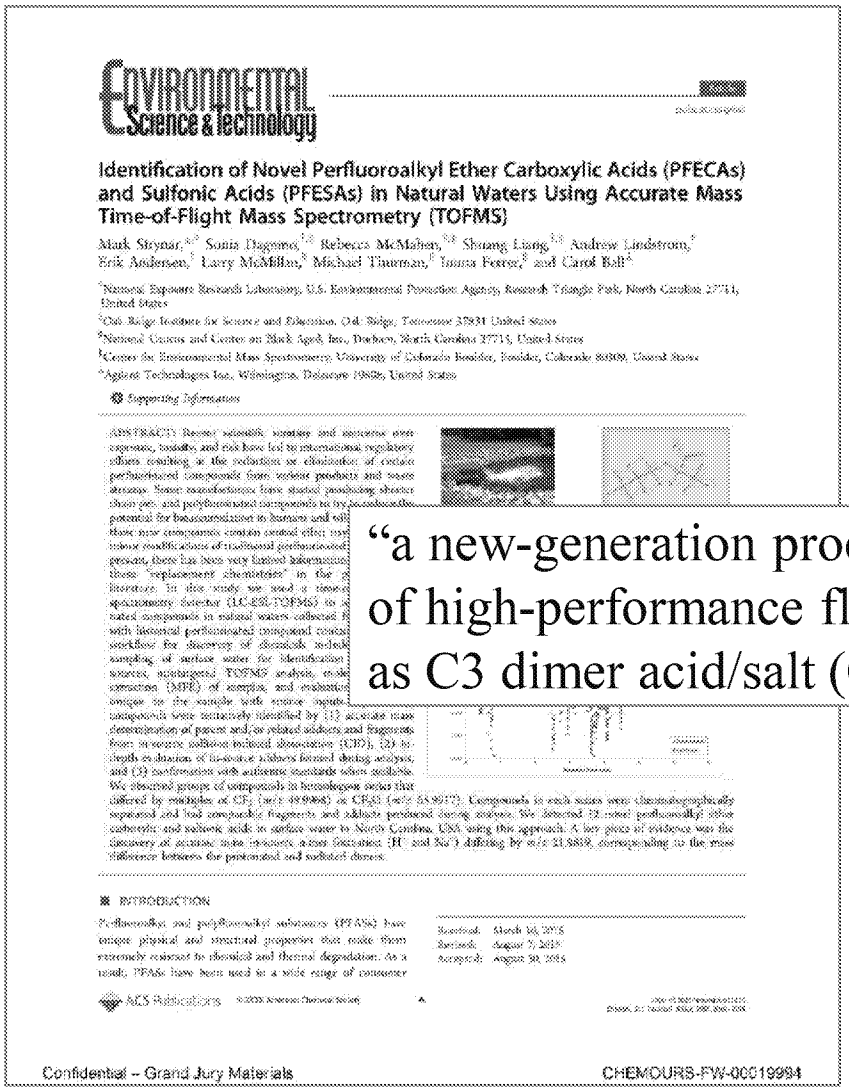
"Connie and Tom:

I hope you are both well. In case you have not seen it, attached is the publication by Mark Strynar.

Mike"

Confidential – Grand Jury Materials CHEMOURS-FW-00019993

Dr. Strynar's Paper Confirmed the Presence of GenX (C3 Dimer Acid) in the Cape Fear River



Environmental Science & Technology

Identification of Novel Perfluoroalkyl Ether Carboxylic Acids (PFECAs) and Sulfonic Acids (PFESAs) in Natural Waters Using Accurate Mass Time-of-Flight Mass Spectrometry (TOFMS)

Mark Strynar,[1,2] Sonia Dagnino,[1,3] Rebecca McMahen,[1,3] Shuang Liang,[1,3] Andrew Lindstrom,[1] Erik Andersen,[1] Larry McMillan,[1] Michael Thurman,[4] Ioana Ferrer,[5] and Carol Ball[5]

[1]National Exposure Research Laboratory, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, United States

[2]Oak Ridge Institute for Science and Education, Oak Ridge, Tennessee 37831 United States

[3]National Caucus and Center on Black Aged, Inc., Durham, North Carolina 27713, United States

[4]Center for Environmental Mass Spectrometry, University of Colorado Boulder, Boulder, Colorado 80309, United States

[5]Agilent Technologies Inc., Wilmington, Delaware 19808, United States

Supporting Information

ABSTRACT: Recent scientific, regulatory and economic issues concerning toxicity and risk have led to international regulatory efforts resulting in the reduction or elimination of certain perfluorinated compounds from various products and waste streams. Some manufacturers have started producing shorter chain gen- and polyfluorinated components to try to reduce the potential for bioaccumulation in humans and wildlife. [illegible] these new components contain ether oxygen or other [illegible] modifications of traditional perfluorinated [illegible] present, there has been very limited information [illegible] these "replacement chemistries" in the [illegible] literature. In this study we used a time-of-[illegible] spectrometry detector (LC-ESI/TOFMS) to [illegible] related components in natural waters collected [illegible] with historical perfluorinated compound contam[illegible] workflow for discovery of chemicals including [illegible] sampling of surface water for identification [illegible] sources, untargeted TOFMS analysis, [illegible] extraction (SPE) of samples, and evaluation [illegible] oxygen in the sample with source inputs [illegible] components were tentatively identified by (1) accurate mass determination of parent and related adducts and fragments from in-source collision induced dissociation (CID), (2) in-depth evaluation of in-source adducts formed during analysis, and (3) confirmation with authentic standards when available. We observed groups of compounds in homologous series that differed by multiples of CF_2 (m/z 49.9968) or CF_2O (m/z 65.9917). Compounds in each series were chromatographically separated and had comparable fragments and adducts produced during analysis. We detected 12 novel perfluoroalkyl ether carboxylic and sulfonic acids in surface water in North Carolina, USA using this approach. A key piece of evidence was the discovery of acetate ions in-source adduct fragments (H^+ and Na^+) differing by m/z 21.9819, corresponding to the mass difference between the protonated and sodiated dimers.

INTRODUCTION

Perfluoroalkyl and polyfluoroalkyl substances (PFASs) have unique physical and structural properties that make them extremely resistant to chemical and thermal degradation. As a result, PFASs have been used in a wide range of consumer

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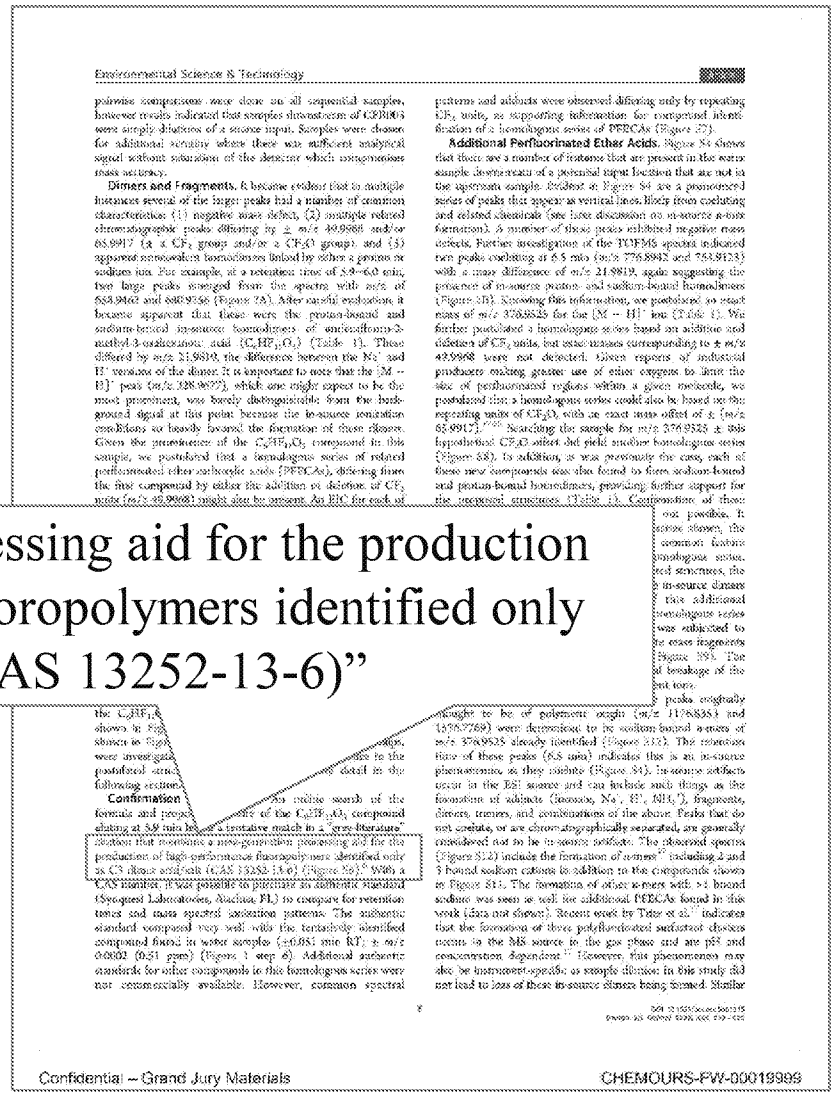

Environmental Science & Technology

pairwise comparisons were done on all sequential samples, however results indicated that samples downstream of CFRW6 were simply dilutions of a source input. Samples were chosen for additional scrutiny where there was sufficient analytical signal without saturation of the detector which compromises mass accuracy.

Dimers and Fragments. It became evident that in multiple instances several of the larger peaks had a number of common characteristics: (1) negative mass defect, (2) multiple related chromatographic peaks differing by ± m/z 49.9968 and/or 65.9917 (a CF_2 group and/or a CF_2O group), and (3) apparent sodiated homodimers linked by either a proton or sodium ion. For example, at a retention time of 5.9−6.0 min, two large peaks emerged from the spectra with m/z of 588.9662 and 680.9566 (Figure 7A). After careful evaluation, it became apparent that these were the proton-bound and sodium-bound in-source homodimers of perfluoro-3-methyl-3-oxabutanoic acid ($C_5HF_7O_3$) (Table 1). These differed by m/z 21.9819, the difference between the Na^+ and H^+ versions of the dimer. It is important to note that the $[M - H]^-$ peak (m/z 328.9977), which one might expect to be the most prominent, was barely distinguishable from the background signal at this point because the in-source ionization conditions so heavily favored the formation of these dimers. Given the prominence of the $C_5HF_7O_3$ compound in this sample, we postulated that a homologous series of related perfluorinated ether carboxylic acids (PFECAs), differing from the first compound by either the addition or deletion of CF_2 units (m/z 49.9968) might also be present. An EIC for each of

patterns and adducts were observed differing only by repeating CF_2 units, as supporting information for compound identification of a homologous series of PFECAs (Figure S7).

Additional Perfluorinated Ether Acids. Figure S8 shows that there are a number of features that are present in the warm sample downstream of a potential input location that are not in the upstream sample. Evident in Figure S8 are a pronounced series of peaks that appear as vertical lines, likely from coeluting and related chemicals (see later discussion on in-source adduct formation). A number of these peaks exhibited negative mass defects. Further investigation of the TOFMS spectra indicated two peaks coeluting at 6.5 min (m/z 776.8942 and 754.9123) with a mass difference of m/z 21.9819, again suggesting the presence of in-source proton- and sodium-bound homodimers (Figure 3B). Knowing this information, we postulated an exact mass of m/z 376.8525 for the $[M - H]^-$ ion (Table 1). We further postulated a homologous series based on addition and deletion of CF_2 units, but exact masses corresponding to ± m/z 49.9968 were not detected. Given reports of industrial producers making greater use of ether oxygens to limit the size of perfluorinated regions within a given molecule, we postulated that a homologous series could also be based on the repeating units of CF_2O, with an exact mass offset of ± (m/z 65.9917).[illegible] Searching the sample for m/z 376.9525 ± this hypothetical CF_2O offset did yield another homologous series (Figure S8). In addition, as was previously the case, each of these new components was also found to form sodium-bound and proton-bound homodimers, providing further support for the proposed structures (Table 1). Confirmation of these [illegible] not possible. It [illegible] series shown, the common factors [illegible] homologous series. [illegible] proposed structures, the [illegible] in-source dimers [illegible] this additional [illegible] homologous series [illegible] was subjected to [illegible] the cross fragments [illegible] Figure 3B). The [illegible] breakage of the [illegible] ent ions.

Confirmation

[illegible] an online search of the formula and [illegible] of the $C_6HF_{11}O_3$ compound eluting at 5.9 min [illegible] a tentative match in a "grey literature" [illegible] that mentions a new-generation processing aid for the production of high-performance fluoropolymers identified only as C3 dimer acid/salt (CAS 13252-13-6) (Figure S9).[illegible] With a CAS number, it was possible to purchase an authentic standard (Synquest Laboratories, Alachua, FL) to compare for retention times and mass spectral isolation patterns. The authentic standard compared very well with the tentatively identified compound found in water samples (±0.051 min RT; ± m/z 0.0002 (0.51 ppm) (Figure 1, step 6). Additional authentic standards for other compounds in this homologous series were not commercially available. However, common spectral

[illegible] peaks originally thought to be of polymeric weight (m/z 1176.8883 and 1176.9769) were determined to be sodium-bound a-mers of m/z 376.9525 already identified (Figure S12). The retention time of these peaks (6.5 min) indicates this is an in-source phenomenon as they coelute (Figure S4). In-source artifacts occur in the ESI source and can include such things as the formation of adducts (formate, Na^+, H^+, NH_4^+), fragments, dimers, trimers, and combinations of the above. Peaks that do not coelute, or are chromatographically separated, are generally considered not to be in-source artifacts. The observed spectra (Figure S12) include the formation of a-mers[illegible] including 2 and 3 bound sodium cations in addition to the components shown in Figure S11. The formation of other a-mers with >1 bound sodium was seen as well for additional PFECAs found in this work (data not shown). Recent work by Tuite et al.[illegible] indicates that the formation of these polyfluorinated surfactant clusters occurs in the MS source in the gas phase and are pH and concentration dependent.[illegible] However, this phenomenon may also be instrument-specific; as sample dilution in this study did not lead to loss of these in-source dimers being formed. Similar

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"a new-generation processing aid for the production of high-performance fluoropolymers identified only as C3 dimer acid/salt (CAS 13252-13-6)"

Chemours's October 2015 NPDES Permit Authorized the Discharge

"**The Chemours Company FC, LLC**

is hereby authorized to:

. . .

2. Discharge treated process wastewater from Butacite®, Nafion®, SentryGlas®, and PVF (polyvinyl fluoride resin) . . . through internal outfall 001;

3. Discharge . . . treated wastewater effluent from 001, through outfall 002 . . . in the Cape Fear River Basin."

Permit NC0003573

SUPPLEMENT TO PERMIT COVER SHEET

All previous NPDES Permits issued to this facility, whether for operation or discharge are hereby revoked, and as of this issuance, any previously issued permit bearing this number is no longer effective. Therefore, the exclusive authority to operate and discharge from this facility arises under the permit conditions, requirements, terms, and provisions included herein.

The Chemours Company FC, LLC

is hereby authorized to:

1. Continue to operate existing wastewater treatment facilities consisting of
   - equalization;
   - neutralization;
   - aerated pre-digester tank;
   - nutrient feed system;
   - aeration tank;
   - three clarifiers,
   - effluent flow measurement;
   - DAF unit;
   - rotary filter for sludge thickening,
   - sludge pump;
   - sludge filter press; and
   - steam heated sludge dryers

2. Discharge treated process wastewater from Butacite®, Nafion®, SentryGlas®, and PVF (polyvinyl fluoride resin), process stormwater, sanitary wastewater, and co-neutralized regenerants from solid treated facilities through internal outfall 001;

3. Discharge stormwater, non-contact cooling water, boiler blowdown and condensate, cooling tower blowdown, and treated wastewater effluent from 001, through outfall 002 at the location specified on the attached map into the Cape Fear River, a class C, WS-IV water in the Cape Fear River Basin.

ED_005478_00019379-00097

Post-Permit Disclosures Reinforce DEQ's Awareness of GenX's Presence in Cape Fear River

From: JOHNSON, MICHAEL E
Sent: Monday, March 07, 2016 10:12 AM
To: **Brower, Connie**

Subject: PFI Publications

The below links are two publications that discuss the APFO (C8) replacement product we produce at this site and EPA sampling studies on the Cape Fear River.

"The below links are two publications that discuss the APFO (C8) replacement product we produce at this site and **EPA sampling studies on the Cape Fear River**."

Confidential – Grand Jury Materials CHEMOURS-FW-00020017

From: **Brower, Connie**
Sent: Wednesday, March 09, 2016 2:46 PM
To: JOHNSON, MICHAEL E

Subject: RE: PE Review book

But, my friend, you did HELP! Thanks so very very much! I appreciate the advice! Hope that you all are doing well with the changeover to Chemours.

And, also – thanks for the two articles. I had seen one of them – but, not both. Unfortunately for us all, the regulators and the regulated, most people do not understand the complexity of federal and state regulations and what can legally be done on any side of the argument.

Regards,
Connie

"And also – thanks for the two articles. I had seen one of them – but, not both. **Unfortunately for us all, the regulators and the regulated, most people do not understand the complexity of federal and state regulations and what can legally be done on any side of the argument.**"

Subject: RE: PE Review book

Hi Connie.

Confidential – Grand Jury Materials CHEMOURS-FW-00020018

Post-Permit Disclosures Reinforce DEQ's Awareness of the Presence of GenX and in the Cape Fear River

- November 10, 2016: Dr. Strynar and Dr. Knappe published an article finding GenX in the Cape Fear River, including from August 2014 samples.
- November 23, 2016: Dr. Knappe emailed DEQ a copy of the paper, noting "very high" GenX levels in the Cape Fear River from Chemours, and that "[a] large number of people are exposed to high level PFASs through their drinking water!"
- January 10, 2017: Mike Johnson sent Connie Brower a copy of Dr. Strynar's and Dr. Knappe's paper.
- April 19, 2017: Dr. Knappe gave DEQ a presentation that expressly identified GenX in the Cape Fear River.

ED_005478_00019379-00099

Since its Formation, Chemours Has Acted Proactively to Address GenX at Fayetteville Works

- Chemours was spun off by DuPont in July 2015
- Since its formation, and notwithstanding the very substantial financial challenges it faced during its infancy, Chemours has acted proactively to address environmental matters, including GenX at Fayetteville Works

ED_005478_00019379-00100

March 2016 — Chemours Begins Reevaluating DuPont's "Project Alice" Abatement Projects

From: TEKIE, ZERU B.
Sent: Thursday, March 31, 2016 8:44 AM
To: MAISCH, JOHN J <John.J.Maisch@chemours.com>
Cc: UHL, SEAN A <SEAN.A.UHL@chemours.com>
Subject: Project Alice

"Hi John:

I would like Sean and I to get [a] **detail[ed] background review of Project Alice as soon as possible**."

I will also invite Andy since he was the lead for Alice

From: TEKIE, ZERU B.
Sent: Thursday, March 31, 2016 8:44 AM
To: MAISCH, JOHN J <John.J.Maisch@chemours.com>
Cc: UHL, SEAN A <SEAN.A.UHL@chemours.com>
Subject: Project Alice

Hi John:

I would like Sean and I to get detail background review of Project Alice as soon as possible. What is the best way to do this? Feel free to invite anyone who you feel can add to our discussion.

Thank you.

Confidential – Grand Jury Materials CHEMOURS-FW-00058289

April 2016 — Chemours Authorized Additional Sampling

Sent: 4/11/2016 8:25:53 PM
Subject: Samples of the HDR Hold Tanks

From: JOHNSON, MICHAEL E [/O=EXCHANGELABS/O
(FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=621
Sent: 4/11/2016 8:25:53 PM
To: FIELDS, DIANNE L [dianne.l.fields@chemours.
CC: HINSON, WILLIAM A [william-a1.hinson@chem
Subject: Samples of the HDR Hold Tanks

Dianne or John.

We have been given the approval to analyze the HDR Hold Tank(s) for HFPO Dimer Acid during the PPVE campaign to determine the efficiency of Project Alice in removing the dimer from our effluent to the river. Also as part of that analytical effort, we are going to try and determine the concentration of Telomeric Acid Fluorides in the HDR Hold Tank(s) as a comparison to the data presented in the NCSU Fluoros poster.

William is setting up the lab equipment to make these analyses, but it will not be ready until perhaps June, which I think is when the PPVE campaign might be over.

Therefore, [illegible] samples of the HDR effluent for future analysis.

[illegible] Tanks are sampled daily for HFA and fluoromalonate. If some number of [illegible] then we will be in good shape.

[illegible] people to set aside 20 of the HDR samples generated during the PPVE [illegible]

Confidential – Grand Jury Materials CHEMOURS-FW-00058302

"**We have been given the approval to analyze the HDR Hold Tank(s) for HFPO Dimer Acid** during the PPVE campaign **to determine the efficiency of Project Alice** in removing the dimer from our effluent to the river. Also as part of that analytical effort, **we are going to try and determine the concentration of Telomeric Acid Fluorides** in the HDR Hold Tank(s) as a comparison to the data presented in the NCSU Fluoros poster."

Nov. 2016 – Chemours Established a Team, Led by a Retired Chemours Executive, to Develop Options and Make a Recommendation

From: SAMPLES, THOMAS
Sent: Tuesday, November 08, 2016 12:59 PM

H; JOHNSON, DAVID W; JOHNSON;

Greetings,

We have been chartered as a team to look at our Fluoro emissions and to make an options analysis to present to our BU president. I have copied the charter here for your review. Please look for an invitation to a kick off meeting in which I hope to share and collect information that would ground us in what we know and what we need to know. There are a few names missing from Chang Shu and Shimizu that will be added later. However, I am thinking we can get started and bring them

ed would like to suggest a standing Tuesday morning session for our work. It can be

"We have been chartered as a team to look at our Fluoro emissions and to make an options analysis to present to our BU president. I have copied the charter here for your review. Please look for an invitation to a kick off meeting in which I hope to share and collect information that would ground us in what we know and what we need to know."

Source: CHEM00143191

Confidential – Grand Jury Materials CHEMOURS-FW-00060018

January 2017 — Water Project Report Recommendations

"**Recommendation 3:**

Fund a technology program to develop a process to precipitate KF and Trifluoroacetate from scrubber effluent for further processing to include recovery or landfill."

Recommendation 2:

Conduct a study of differences between scrubber unit design between Dordrecht Works and Washington Works to increase efficiency from 97.8% to 99%.

Recommendation 3:

event precipitation and GAC carbon technology development is unsuccessful."

These recommendations require a deployment of resources to execute. The next steps should be to take each recommendation and work with Operations and Technology to scope the resource requirements, time line and cost of each recommendation.

"**Recommendation 4:**

Conduct studies on remaining supernate to determine if carboxylic acid salts can be removed using GAC technology. **If feasible, install GAC system to treat remaining supernate from Division Waste Gas Scrubber and Vinyl Ether South Waste Gas Scrubber post treatment from recommendation 3**."

acid fluorides [COF2, PAF and the Telomer Acid fluorides where n=0-4, PPF, MD, HFPO Dimer]. Using methods, quantify the actual concentrations of these compounds in the scrubber effluent.

Recommendation 2:

Conduct log KOW studies on EVE and PSEPVE to establish whether EPA BCF modeling is valid. Using existing analytical methods quantify scrubber effluent for EVE and PSEPVE to determine potential for

"**Recommendation 5:**

Refresh estimate for installation and operation of thermal oxidizer to treat Scrubbers effluent in the event precipitation and GAC carbon technology development is unsuccessful."

Confidential – Grand Jury Materials CHEMOURS-FW-00095176

Confidential – Grand Jury Materials CHEMOURS-FW-00096177

March 2017 — Chemours Strategy Meeting — Recommends Funding Project Wright

Chemours

Fluoropolymers 2017 Strategy Review

Protect The Core

1C Sustainability Projects

Project	Timing	R&D Cost ($M)	Regulatory / Tox ($M)	Capital Cost ($Million)
Lion King transition (see below for stage of development by product)	By 2023 driven by CoRAP*	$2.2/year Incremental cost (see table below)	$2.0 (regulatory & tox) + $0.5 (appeal process)	Dependent on alternative chosen
Project Wright** (precipitate salts + activated carbon)	Start R&D 2017	$1.0		~$21M (Filtration/ GAC '18/'19) + $1/yr O&M
Total		$3.2	$2.5	~$21M +$1/yr O&M

Lion King = Transition from current polymer processing aid (C3dimer Acid/GenX)
*CoRAP = Community Rolling Action Plan (The Evaluation step of REACh)

Wright = Continuous improvement in emissions reduction from FW
**If Wright is unsuccessful, evaluate thermal conversion ($40-60M capex)

Chemours

23

"Wright = Continuous improvement in emissions reduction from FW
**If Wright is unsuccessful, evaluate thermal conversion ($40-60M capex)"

March 2017 — Chemours Executive Team Meeting — Recommends Funding

Fluoroproducts Capital Template

US$ in millions		Actual 2014	Actual 2015	Actual 2016	2017	2018	2019	2020
Capital Expenditure Base Plan	Auth Y/N							
Weilai -Shenzhen Teflon® Finishes relocation	Y	$ 0.5	$ 5.9	$ 2.8				
Purchase/Install 134a Reactor	Y	$ -	$ 10.1	$ 0.1				
DW Phase Out F22 on Refrig Machines	Y	$ 13.5	$ 2	$ 0				
DW FEP Fluorination	Y	$ -	$ -	$ 2.9	$ 6.9	$ 0.6	$ -	$ -
FW IXM Flow Battery	N	$ -	$ -	$ -	$ 2.1	$ 10.6	$ -	$ -
FW New Low Temp Monomer for FKM	N	$ -	$ -	$ -	$ -	$ 10.0	$ -	$ -
PFPE Coating, new product	N	$ -	$ -	$ -	$ -	$ -	$ 12.0	$ -
FW Project Wright	N	$ -	$ -	$ -	$ -	$ 10.5	$ 10.5	$ -
Ap[illegible]ation Development Labs	N	$ -	$ -	$ -	$ -	$ 10.0	$ 10.0	$ 40.0
Othe[illegible]	Y	$ 90	$ 95	$ 82	$ 76	$ 108	$ 80	$ 100
Plant Cap[illegible]	NA	$ 104	$ 113	$ 88.1	$ 85.0	$ 140.1	$ 103	$ 140
Project Earth[illegible]	Y	$ -	$ -	$ 34.9	$ 147.2	$ 79.0	$ -	$ -
Project Chill	Y	$ -	$ -	$ 2.3	$ 31.2	$ 43.0	$ -	$ -

"FW Project Wright $10.5 $10.5"

Chemours

1

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CHEMOURS-FW-00350335

April 2017 Board of Directors Meeting — Preliminary Budget Incorporated $21 Million for Project Wright

"Strategic Choices and Investments"

Executive Summary

2017-2020 Strategic Objectives

Chemours Fluoroproducts will sustain and build on the Opteon™ HFO growth momentum [illegible] ate growth of higher-value fluoropolymer product lines while improving cost competitiveness and environmental [illegible] p to deliver ~$3B of revenue and ~$800M of EBITDA by 2020.

Strategic Priorities

I. Defend Opteon™ IP and create lowest-cost mfg. advantage

II. Improve cost competitiveness through the rationalization of uncompetitive sites and institutionalization of continuous improvement programs, tools, and processes

III. Drive expansion of differentiated, higher-value offerings and improve value capture of our lower margin products via new applications and products

IV. Leverage technical capabilities, regulation changes, and NGO pressure to create competitive advantage through environmental product and process leadership

V. Implement a portfolio management process; selectively use M&A to strengthen the portfolio and to solve for China

Strategic Choices and Investments

I. Resource Opteon™ legal team and marketing plan; complete low-cost Corpus YF plant; identify manufacturing partner for 2nd Opteon™ Foam plant using new low-cost process

II. Shut down Maitland and El Dorado sites; evaluate phased footprint reduction at Chambers Works; evaluate shutdown of Dordrecht Works; introduce lean tools to "WAVE" process

III. Implement a market dev process to identify/capture growth opportunities – initial focus on transportation, electronics, and energy markets; grow Opteon™ Blends and Foam

IV. Invest in sustainable product & process technologies

V. Optimize resource al[illegible]ation to highest earning businesses and product lines; [illegible]te MDF acquisition

Significant Changes vs. Previou[illegible]

Move from "material specialist" to "application developer"; fund growth plan thro[illegible] [illegible]isting opex and reduction of fixed costs; use M&A to strengthen "enter" or "grow" product lines.

"Invest in sustainable product & process technologies"

Fluoroproducts Base Case

	Base Case						
	2014	2015	2016	2017	2018	2019	2020
Revenue	**2,386**	**2,237**	**2,255**	**2,463**	**2,502**	**2,480**	**2,464**
Gross Product Margin	**783**	**742**	**806**	**926**	**952**	**970**	**972**
GPM %	**33%**	**33%**	**36%**	**38%**	**38%**	**39%**	**39%**
Distribution	66	61	61	60	53	62	62
Other Product Costs	83	89	62	54	55	56	56
LIFO	5	4	(18)	(4)	0	0	0
Expanded Gross Margin	**629**	**569**	**701**	**817**	**834**	**853**	**855**
EGM%	**26%**	**26%**	**31%**	**33%**	**33%**	**34%**	**35%**
Other Income	74	35	46	44	40	42	42
Business Period Costs	292	268					
Operating Profit	**411**	**355**					
Operating Margin	**17%**	**16%**					
Corp Functions	(130)	(130)					
D&A	82	88					
Other	(61)	(13)					
Adjusted EBITDA	**282**	**300**	**445**	**532**	**579**	[illegible]	**639**
EBITDA Margin	**12%**	**13%**	**20%**	**22%**	**23%**	[illegible]	**26%**
Change NWC	(33)	(62)	76	(24)	(10)	14	10
Capex	(104)	(113)	(125)	(272)	(228)	(60)	(100)
Free Cash Flow	**145**	**125**	**396**	**236**	**297**	**540**	**539**
Net [illegible]ets	1,623	1,622	1,609	1,852	2,030	1,996	1,964
Pre- [illegible]RONA	12%	13%	21%	25%	24%	25%	26%

(228) (60)

Chemours

PROPRIETARY AND CONFIDENTIAL

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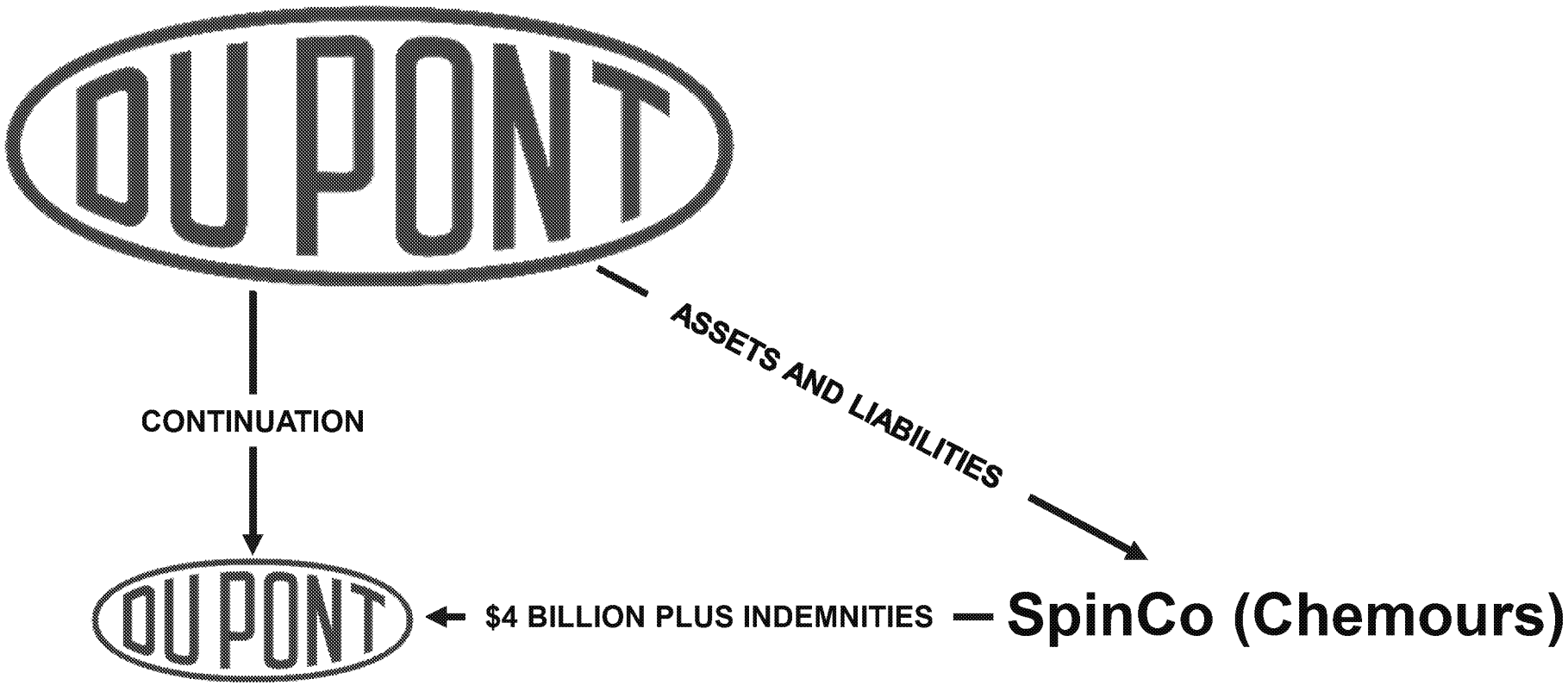
CHEMOURS-FW-00350393

"Capex"

DuPont's Spin-Off of Chemours



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Chemours Was Given a Disproportionate Share of Liabilities

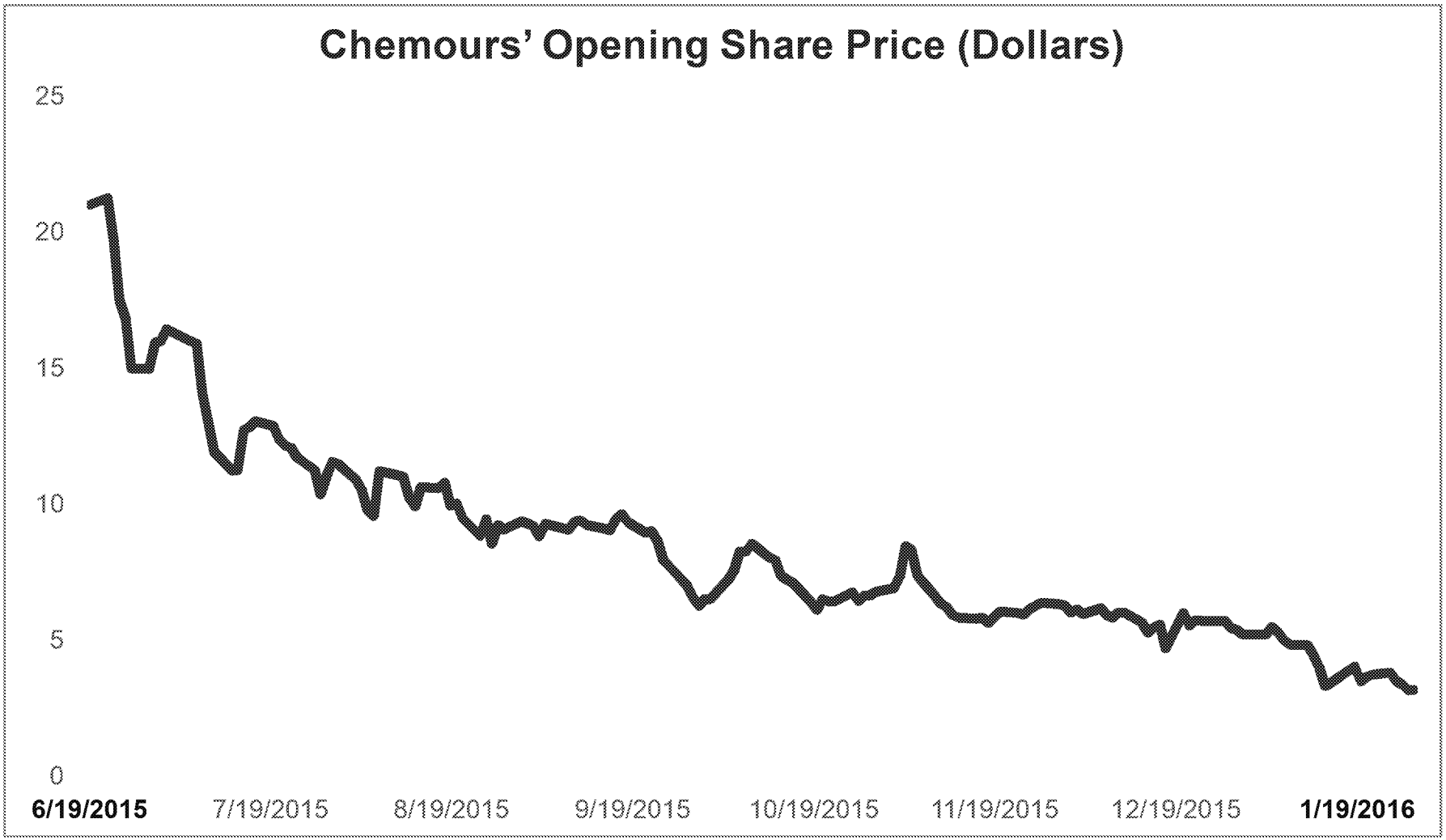
- Chemours was given about 2/3 of DuPont's environmental liabilities, but business lines that accounted for around 1/5 of DuPont's sales.

- This includes liabilities for PFOA, benzene, asbestos, and all site remediation. The spin-off documents list over 80 specific liabilities, and the list is not exclusive.

- Chemours was given liabilities that have no relation to its business lines.
  - For example, all pending and future asbestos cases.
  - DuPont itself estimated this could be as much as $106 million.

ED_005478_00019379-00109

By January 2016, Chemours' Share Price Lost 85% of Its Value



Analysts Predicted Chemours' Imminent Bankruptcy

10/16/2017 How DuPont Spinoff Chemours Came Back from the Brink

FORTUNE

How DuPont Spinoff Chemours Came Back from the Brink

Mark Wegmann, Chairman and CEO of Chemours Bloomberg via Getty Images

Chemours was dealt a weak hand by DuPont right from the start. Here's how it bounced back.

By Cyrus Sexauer May 18, 2016

When industrial giant DuPont (DD, +0.89%) spun off its performance chemicals division in July 2015, few gave the orphaned appendage much hope. Loaded up with debt and stuffed full of potentially toxic assets—on multiple levels—the new company, re-branded as Chemours (CC, -1.33%), was seen by many investors as a listing garbage snow locked on a one-way course to the bottom of the ocean.

By February, the company's share ... h as 85% from its July listing price. Short sellers were ... e before Chemours was, well, "no more."

Citron RESEARCH

June 2, 2016

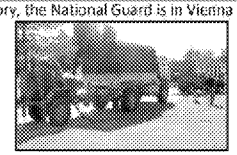
Chemours is a Bankruptcy Waiting to Happen!
Chemours was Purposely Designed for Bankruptcy!

This Stock i

After 15 years of publishing, Citron

"Chemours is a Bankruptcy Waiting to Happen! Chemours was Purposely Designed for Bankruptcy!"

At this very moment, as you read this story, the National Guard is in Vienna West Virginia facilitating distribution of drinking water to the public, following the "Do Not Drink" advisory issued in the wake of the recent revision of EPA contamination guidelines for C8 – also known as PFOA.



While this might be a new story to some, it is has been daily life for the people of the Mid-Ohio Valley for 30 years. Most recently, the same problems have been witnessed throughout the United States, and reaching as far as DuPont-implicated facilities in The Netherlands and Japan.

-off from DuPont, is the latest chapter in a well year pattern of wanton and deliberate abuse of humanity, , and now the capital markets.

rageous Story of Chemours Creation

June 2, 2016 Page 1 of 17

"When industrial giant DuPont (DD, +0.89%) spun off its performance chemicals division in July 2015, few gave the orphaned appendage much hope."

Chemours' Financial Condition

- In 2015-2016, due to its financial condition, Chemours:
  - Had to sell 3 business lines
  - Had to end 1 other line
  - Had to close 2 facilities
  - Had to do 2 corporate restructurings
  - Had to eliminate over 1,000 jobs
  - Had to enter multiple credit amendments with lenders
- Chemours' financial condition did not stabilize fully until February 2017
  - After resolution of a dispute with DuPont over payment for the PFOA settlement

ED_005478_00019379-00112

Chemours' Actions Immediately Following the June 2017 News Reports

- Publicly acknowledged the GenX byproduct discharge and took responsibility for addressing it.
- Cooperated extensively with DEQ and the State.
- Began voluntarily capturing substantial parts of the Fayetteville Works process wastewater on June 21, 2017.
- Acted quickly to operate within the 140 ppt provisional health goal, even though it believes it is scientifically unwarranted.

ED_005478_00019379-00113

Proposed Agenda

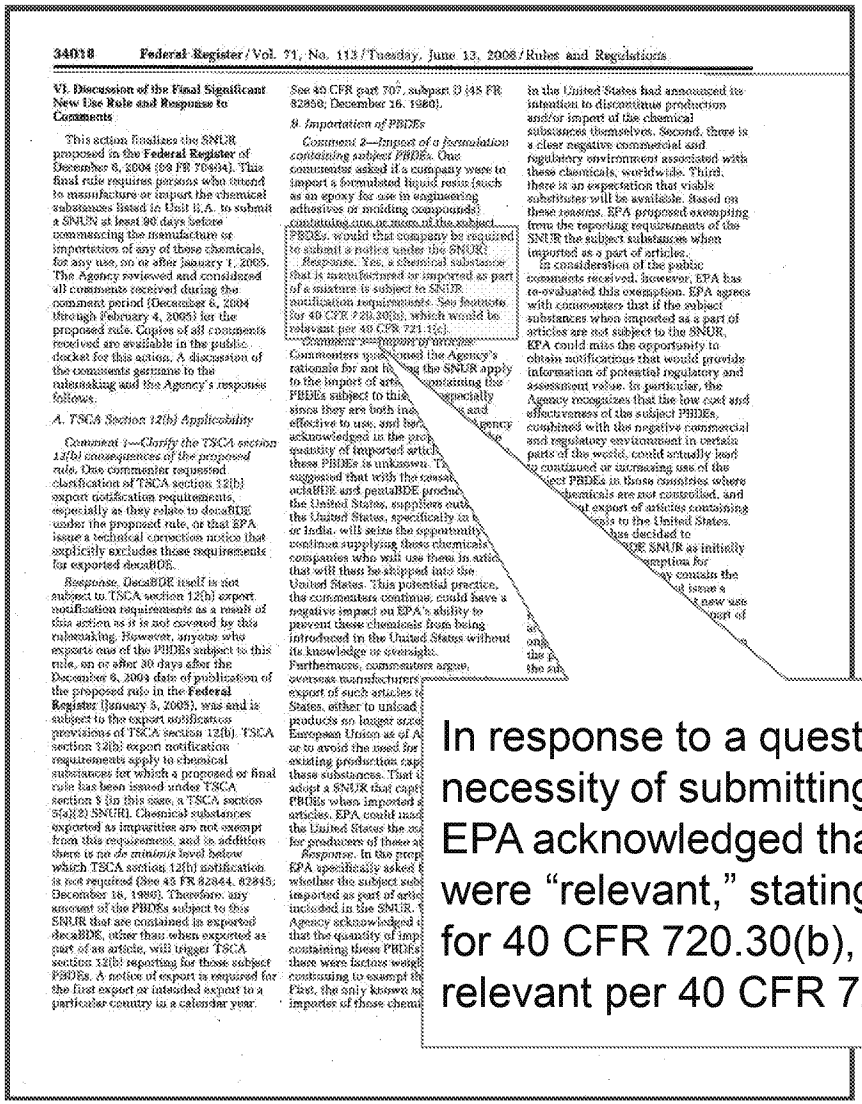
- Chemours' History and Products
- Chemours' Commitment to Sustainability
- Comprehensive Consent Order Agreed to in Fayetteville
- Chemours' Historic GenX Operations Have Been Legal and Appropriate
- **TSCA NOV Issues Are Being Addressed**
- Washington Works – Status and Progress
- Chambers Works – Status and Progress
- Update on Fluorochemical Facilities
- Other Issues, Including CWA Section 308 Responses
- Discussion and Next Steps

Non-isolated Intermediates Are Exempt from Significant New Use Notice Requirements

- Non-isolated intermediates are expressly exempted from Pre-Manufacture Notice reporting requirements. *See* 40 CFR 720.30(h)(8).
- This PMN exemption also applies to Significant New Use Rule regulations. *See* 40 CFR 721.1(c) ("The provisions of part 720 apply to this part 721").
- Furthermore, the Part 720 exemptions explicitly apply to Significant New Use Rules for individual compounds, including the one for COF_2. *See* 40 CFR 721.1(b).

ED_005478_00019379-00117

EPA Has Acknowledged that Analogous Exemptions Apply



34018 Federal Register / Vol. 71, No. 113 / Tuesday, June 13, 2006 / Rules and Regulations

VI. Discussion of the Final Significant New Use Rule and Response to Comments

This action finalizes the SNUR proposed in the Federal Register of December 8, 2004 (69 FR 70484). This final rule requires persons who intend to manufacture or import the chemical substances listed in Unit II.A. to submit a SNUN at least 90 days before commencing the manufacture or importation of any of these chemicals, for any use, on or after January 1, 2005. The Agency reviewed and considered all comments received during the comment period (December 8, 2004 through February 4, 2005) for the proposed rule. Copies of all comments received are available in the public docket for this action. A discussion of the comments germane to the rulemaking and the Agency's response follows.

A. TSCA Section 12(b) Applicability

Comment 1—Clarify the TSCA section 12(b) consequences of the proposed rule. One commenter requested clarification of TSCA section 12(b) export notification requirements, especially as they relate to decaBDE under the proposed rule, or that EPA issue a technical correction notice that explicitly excludes these requirements for exported decaBDE.

Response. DecaBDE itself is not subject to TSCA section 12(b) export notification requirements as a result of this action as it is not covered by this rulemaking. However, anyone who exports one of the PBDEs subject to this rule, on or after 30 days after the December 8, 2004 date of publication of the proposed rule in the Federal Register (January 3, 2005), was and is subject to the export notification provisions of TSCA section 12(b). TSCA section 12(b) export notification requirements apply to chemical substances for which a proposed or final rule has been issued under TSCA section 5 (in this case, a TSCA section 5(a)(2) SNUR). Chemical substances exported as impurities are not exempt from this requirement, and in addition there is no *de minimis* level below which TSCA section 12(b) notification is not required (See 43 FR 62844, 62845; December 18, 1980). Therefore, any amount of the PBDEs subject to this SNUR that are contained in exported decaBDE, other than when exported as part of an article, will trigger TSCA section 12(b) reporting for those subject PBDEs. A notice of export is required for the first export or intended export to a particular country in a calendar year. See 40 CFR part 707, subpart D (48 FR 32850; December 26, 1980).

B. Importation of PBDEs

Comment 2—Impact of a formulation containing subject PBDEs. One commenter asked if a company were to import a formulated liquid resin (such as an epoxy for use in engineering adhesives or molding compounds) containing one or more of the subject PBDEs, would that company be required to submit a notice under the SNUR?

Response. Yes, a chemical substance that is manufactured or imported as part of a mixture is subject to SNUR notification requirements. See footnote for 40 CFR 720.30(b), which would be relevant per 40 CFR 721.1(c).

Comment 3—Impact of an article. Commenters questioned the Agency's rationale for not [illegible] the SNUR apply to the import of arti[illegible] containing the PBDEs subject to this [illegible] especially since they are both ina[illegible] and effective to use, and bo[illegible] Agency acknowledged in the prop[illegible] quantity of imported articl[illegible] these PBDEs is unknown. T[illegible] suggested that with the cessa[illegible] octaBDE and pentaBDE produc[illegible] the United States, suppliers outs[illegible] the United States, specifically in [illegible] or India, will seize the opportunity [illegible] continue supplying these chemicals [illegible] companies who will use them in artic[illegible] that will then be shipped into the United States. This potential practice, the commenters continue, could have a negative impact on EPA's ability to prevent these chemicals from being introduced in the United States without its knowledge or oversight. Furthermore, commenters argue, overseas manufacturers [illegible] export of such articles t[illegible] States, either to unload [illegible] products no longer acce[illegible] European Union as of A[illegible] or to avoid the need for [illegible] existing production cap[illegible] these substances. That [illegible] adopt a SNUR that capt[illegible] PBDEs when imported a[illegible] articles. EPA could mak[illegible] the United States the co[illegible] for producers of these a[illegible]

Response. In the prop[illegible] EPA specifically asked [illegible] whether the subject sub[illegible] imported as part of artic[illegible] included in the SNUR. [illegible] Agency acknowledged [illegible] that the quantity of imp[illegible] containing these PBDEs [illegible] there were factors weig[illegible] continuing to exempt th[illegible] First, the only known s[illegible] importer of these chemi[illegible] in the United States had announced its intention to discontinue production and/or import of the chemical substances themselves. Second, there is a clear negative commercial and regulatory environment associated with these chemicals, worldwide. Third, there is an expectation that viable substitutes will be available. Based on these reasons, EPA proposed exempting from the reporting requirements of the SNUR the subject substances when imported as a part of articles.

In consideration of the public comments received, however, EPA has re-evaluated this exemption. EPA agrees with commenters that if the subject substances when imported as a part of articles are not subject to the SNUR, EPA could miss the opportunity to obtain notifications that would provide information of potential regulatory and assessment value. In particular, the Agency recognizes that the low cost and effectiveness of the subject PBDEs, combined with the negative commercial and regulatory environment in certain parts of the world, could actually lead to continued or increasing use of the [illegible] PBDEs in those countries where [illegible] chemicals are not controlled, and [illegible] export of articles containing [illegible] to the United States. [illegible] has decided to [illegible] SNUR as initially [illegible] exemption for [illegible] may contain the [illegible] of issue a [illegible] new use [illegible] of

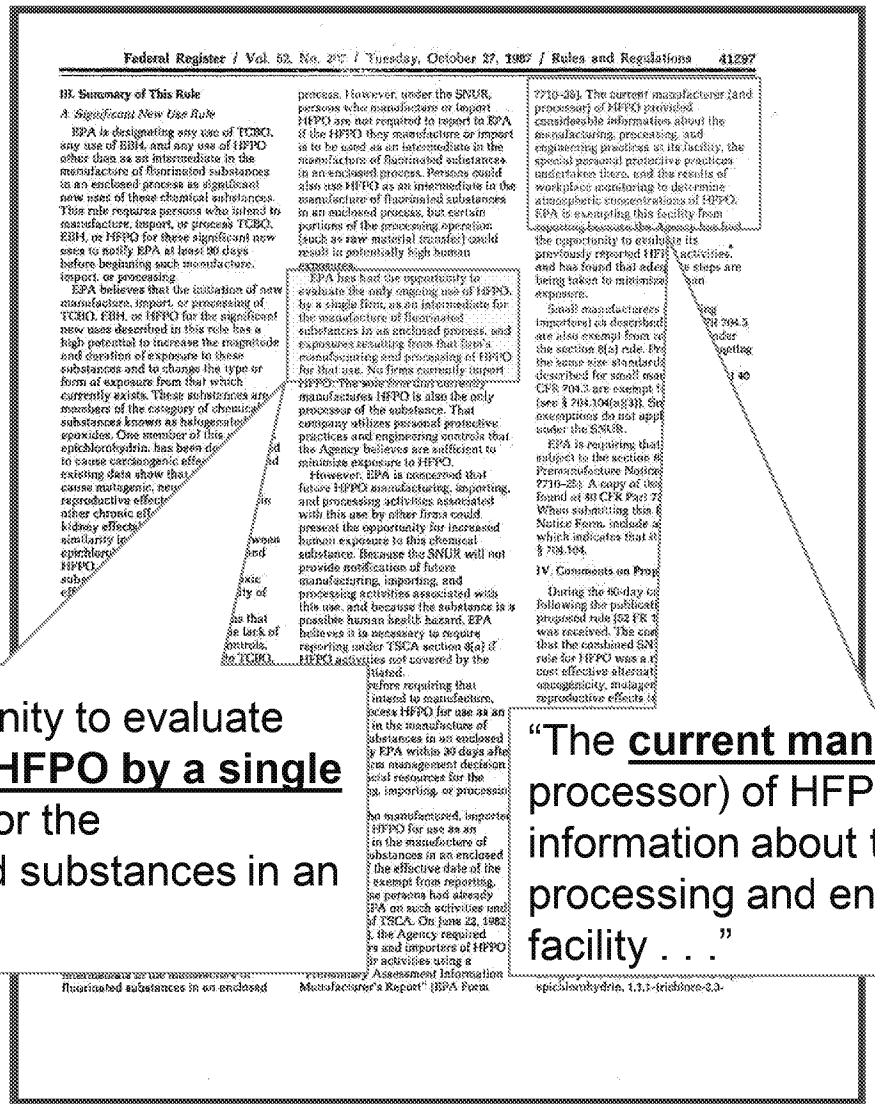
- This Federal Register Notice relates to a different compound (PBDE).
- In this context, EPA acknowledged the applicability of exemptions under 40 CFR 720.30 to Significant New Use reporting requirements (40 CFR 721).

In response to a question about the necessity of submitting a SNUR notification, EPA acknowledged that PMN exemptions were "relevant," stating that: "See footnote for 40 CFR 720.30(b), which would be relevant per 40 CFR 721.1(c)."

71 FR 34015, 34018 (Jul. 13, 2006)

Chemours' Use of HFPO Was Ongoing and Not "New"

Final Rule Promulgating HFPO Significant New Use Rule


Federal Register / Vol. 52, No. 207 / Tuesday, October 27, 1987 / Rules and Regulations 41297

III. Summary of This Rule

A. Significant New Use Rule

"EPA has had the opportunity to evaluate the only **ongoing use of HFPO by a single firm**, as an intermediate for the manufacture of fluorinated substances in an enclosed process . . ."

"The **current manufacturer** (and processor) of HFPO provided considerable information about the manufacturing, processing and engineering practices at its facility . . ."

52 FR 41296, 41297 (Oct. 27, 1987)

DuPont Was the Sole Manufacturer Referenced by EPA

SUPPLEMENTARY INFORMATION: EPA is terminating rulemaking under section 4(a) of TSCA for health effects testing of HFPO.

I. Background

The Interagency Testing Committee (ITC) designated the category of halogenated alkyl epoxides for priority testing consideration in its Second Report, published in the **Federal Register** of April 19, 1978 (43 FR 16684). HFPO was one of seven chemical substances (chemicals) in the category of halogenated alky epoxides. The ITC recommended that halogenated alkyl epoxides be considered for testing for oncogenicity, mutagenicity, teratogenicity, and other chronic effects. The ITC also recommended that epidemiology studies be considered. The other six chemicals in this category were: Epichlorohydrin (ECH), 1,1,1-trichloro-2,3-epoxy-propane (TCPO), 1,4-dichloro-2,3-epoxybutane (DCBO), tetrafluoroethylene oxide (TFEO), 1,1,3-trichloro-3,4-epoxybutene (TCBO), and 1-bromo-2,3-epoxybutane (EBH). The ITC's recommendations were based on high production levels for one member of this category (900 million pounds per year for ECH), a National Institute for Occupational Safety and Health (NIOSH) estimate of 53,000 to 140,000 workers exposed to ECH each year, an expected increase in the use of other halogenated alkyl epoxides, and limited studies on the oncogenic, mutagenic, teratogenic, and other chronic effects of members of this category of substances.

After considering all the available information on the category of halogenated alkyl epoxides, EPA responded to ITC's recommendation by issuing a proposed rule, published in the **Federal Register** of December 30, 1983 (48 FR 57866), which would require oncogenicity, mutagenicity, and reproductive effects testing for HFPO under the authority of section 4(a)(1)(A) of TSCA. EPA took this action because chemicals that are structurally similar to HFPO (i.e., ECH) have demonstrated oncogenic, mutagenic, and reproductive activity in animals and EPA believed there was the potential for HFPO to elicit similar effects, and because monitoring data indicated there was workplace exposure to HFPO (Ref. 1). In addition, reduced spermatogenesis was observed in a subchronic study on HFPO, suggesting that HFPO may produce reproductive effects (Ref. 2).

In the **Federal Register** of December 30, 1983 (48 FR 57866), EPA also published a "decision not to test" the other six chemicals in the category of halogenated alkyl epoxides. EPA decided that testing of ECH was not necessary because there are already sufficient data available on this chemical. EPA decided that the testing of TCPO, DCBO, and TFEO was not appropriate because none of these three Chemicals are listed on the TSCA inventory and thus are subject to review under TSCA section 5(a) before they are manufactured for uses under TSCA jurisdiction. In the case of TCBO and EBH, EPA found that TCBO is not being manufactured, imported, or processed and EBH is being produced in quantities of 28 pounds or less solely for research and development.

The proposed rule contained a chemical profile of HFPO. Specific data on the quantity of HFPO produced annually and the number of workers employed during its production and processing were claimed to be confidential business information (CBI). EPA found the annual production of HFPO to be relatively low and the number of workers employed to be relatively few.

During the comment period following the publication of the HFPO proposed rule, EPA received manufacturing and processing design, industrial hygiene, and engineering control information from E.I. Du Pont De Nemours & Company (Du Pont), the sole manufacturer and processor of HFPO in the United States (Ref. 3). Du Pont summarized its HFPO operation as follows: The entire HFPO manufacturing process is carried out in a totally closed and automated system; all process vents are scrubbed with caustic before being discharged to the atmosphere; before any piping breaks are made, process materials are evacuated through a caustic scrubber; protective equipment (acid suit with air supplied helmet) is required when making all piping breaks (e.g., sampling); the presence of HFPO in the exhaust air is monitored using a Miran IR Analyzer; and all HFPO produced is used in the production of fluorinated substances and is not present in free form after processing.

Based on analysis of the information submitted by Du Pont, EPA believes that exposure to HFPO in the workplace is being controlled to levels which are not expected to present an unreasonable risk of adverse health effects even if the adverse effects for which it is suspected based on analogy to ECH are verified. The monitoring data from HFPO manufacturing and processing sites showed that concentrations of HFPO in the workplace are generally below 0.1 parts per million (ppm), which was the limit of detection, and in no case above 2 ppm.

Furthermore, EPA has also issued a combined TSCA significant new use rule (SNUR) under section 5(a)(2) and section 8(a) reporting rule for HFPO, published in the **Federal Register** of October 27, 1987 (52 FR 41236). The SNUR for HFPO will ensure that EPA is notified if HFPO is manufactured, imported, or processed for any use other than as an intermediate in the manufacture of fluorinated substances in an enclosed process. Because the SNUR will not provide notification of future manufacturing, importing, and processing activities associated with HFPO's current use, EPA has required reporting under section 8(a) if HFPO activities not covered by the SNUR are initiated.

These rules will allow EPA to track the use of HFPO and to investigate the health and environmental impacts of such activities.

EPA is issuing this notice to terminate the proposed test rule for HFPO because: EPA believes that Du Pont is presently controlling the exposure to HFPO in the workplace to levels which are not expected to present an unreasonable risk of health effects; and EPA has issued the combined SNUR/[illegible] rule for HFPO to be used as a [illegible] in exposures [illegible] may reconsider the [illegible] HFPO at that time.

II. Rulemaking Record

A section 4 record, containing the basic information considered by EPA in developing its decision on HFPO, is available for Public inspection in the TSCA Public Docket Office, NE-G004, 401 M St., SW., Washington, DC from 8 a.m. to 4 p.m., Monday through Friday, except legal holidays (docket number OPTS-42044A). CBI, while part of the rulemaking record is not available for public review.

The rulemaking record includes the following information:

A. Supporting Documentation

(1) The **Federal Register** notice containing the ITC designation of halogenated alkyl epoxides to the Priority List (43 FR 16684; April 19, 1978).

(2) The **Federal Register** notice containing EPA's proposed test rule on HFPO (48 FR 57866; December 30, 1983).

(3) The **Federal Register** notice containing final significant new use and section 8(a) rules for HFPO (52 FR 41236; October 27, 1987).

(4) Communications consisting of letters, contact reports of telephone conversations, and meeting summaries.

- EPA specifically named DuPont as the sole HFPO manufacturer in a separate rule.

"During the comment period following the publication of the HFPO proposed rule, EPA received manufacturing and processing design, industrial hygiene, and engineering control information from **E.I. Du Pont De Nemours & Company (Du Pont), the sole manufacturer of HFPO in the United States**."

53 FR 40244, 40245 (Oct. 14, 1988)

Furthermore, HFPO Is Used in an "Enclosed Process"

- Furthermore, Chemours' use of HFPO is not subject to reporting requirements pursuant to the Significant New Use Rule.
- As set forth in the Significant New Use Rule, no notification is required where HFPO is used in an "enclosed process." *See* 40 CFR 721.4160.
- EPA specifically acknowledged that DuPont's use of HFPO was in an "enclosed process" in promulgating the SNUR.

EPA Previously Acknowledged Use in an Enclosed Process

III. Summary of This Rule

A. Significant New Use Rule

EPA is designating any use of TCBO, any use of EBH, and any use of HFPO other than as an intermediate in the manufacture of fluorinated substances in an enclosed process as significant new uses of these chemical substances. This rule requires persons who intend to manufacture, import, or process TCBO, EBH, or HFPO for these significant new uses to notify EPA at least 90 days before beginning such manufacture, import, or processing.

EPA believes that the initiation of new manufacture, import, or processing of TCBO, EBH, or HFPO for the significant new uses described in this rule has a high potential to increase the magnitude and duration of exposure to these substances and to change the type or form of exposure from that which currently exists. These substances are members of the category of chemical substances known as halogenated alkyl epoxides. One member of this category, epichlorohydrin, has been demonstrated to cause carcinogenic effects in rats and existing data show that it may also cause mutagenic, neurotoxic, and reproductive effects, as well as certain other chronic effects (e.g., liver and kidney effects), based upon the similarity in chemical structure between epichlorohydrin and TCBO, EBH, and HFPO. EPA believes that these substances may exhibit similar toxic effects. Given the potential toxicity of these chemical substances, the reasonably anticipated situations that could result in exposure, and the lack of sufficient existing regulatory controls, individuals could be exposed to TCBO, EBH, or HFPO at levels which could result in adverse effects.

The considerations of these factors has resulted in EPA's decision that certain uses of TCBO, EBH, or HFPO be designated significant new uses of these chemical substances. Persons intending to manufacture, import, or process TCBO, EBH, or HFPO for these significant new uses are required to notify EPA at least 90 days before they begin such manufacture, import, or processing. Advance notification will allow EPA the opportunity to evaluate the intended activities and to protect against adverse exposures to TCBO, EBH, or HFPO before they can occur.

B. Section 8(a) Rule

The SNUR for HFPO described above will ensure EPA is notified in the event that HFPO is manufactured, imported, or processed for any use other than as an intermediate in the manufacture of fluorinated substances in an enclosed process. However, under the SNUR, persons who manufacture or import HFPO are not required to report to EPA if the HFPO they manufacture or import is to be used as an intermediate in the manufacture of fluorinated substances in an enclosed process. Persons could also use HFPO as an intermediate in the manufacture of fluorinated substances in an enclosed process, but certain portions of the processing operation (such as raw material transfer) could result in potentially high human exposures.

EPA has had the opportunity to evaluate the only ongoing use of HFPO, by a single firm, as an intermediate for the manufacture of fluorinated substances in an enclosed process, and exposures resulting from that firm's manufacturing and processing of HFPO for that use. No firms currently import HFPO. The sole firm that currently manufactures HFPO is also the only processor of the substance. That company utilizes personal protective practices and engineering controls that the Agency believes are sufficient to minimize exposure to HFPO.

However, EPA is concerned that future HFPO manufacturing, importing, and processing activities associated with this use by other firms could present the opportunity for increased human exposure to this chemical substance. Because the SNUR will not provide consideration of future manufacturing, importing, and processing activities associated with this use, and because the substance is a possible human health hazard, EPA believes it is necessary to require reporting under TSCA section 8(a) if HFPO activities not covered by the SNUR are initiated.

EPA is therefore requiring that persons who intend to manufacture, import, or process HFPO for use as an intermediate in the manufacture of fluorinated substances in an enclosed process notify EPA within 30 days after making the firm management decision to commit financial resources for the manufacturing, importing, or processing of HFPO.

Persons who manufactured, imported, or processed HFPO for use as an intermediate in the manufacture of fluorinated substances in an enclosed process as of the effective date of the final rule are exempt from reporting, provided these persons had already reported to EPA on such activities under section 8(a) of TSCA. On June 22, 1982 (47 FR 26998), the Agency required manufacturers and importers of HFPO to report on their activities using a "Preliminary Assessment Information Manufacturer's Report" (EPA Form 7710-35). The current manufacturer (and processor) of HFPO provided considerable information about the manufacturing, processing, and engineering practices at its facility, the special personal protective practices undertaken there, and the results of workplace monitoring to determine atmospheric concentrations of HFPO. EPA is exempting this facility from reporting because the Agency has had the opportunity to evaluate its previously gathered data.

[illegible] being taken to minimize human exposure.

Small manufacturers (including importers) as described at 40 CFR 704.3 are also exempt from reporting under the section 8(a) rule. Processors meeting the same size standards as those described for small manufacturers at 40 CFR 704.3 are exempt from reporting (see § 704.104(a)(3)). Small business exemptions do not apply to reporting under the SNUR.

[illegible] subject [illegible] Premanufacture [illegible] 7710-25). A copy is [illegible] found at 40 CFR Part 720. [illegible] When submitting this Premanufacture Notice Form, include a cover sheet which indicates that it is in response to § 704.19.

IV. Comments on Proposed Rule

During the 60-day comment period following the publication of the proposed rule (52 FR 167) one comment was received. The commenter stated that the combined SNUR/section 8(a) rule for HFPO was a reasonable and cost effective alternative to requiring oncogenicity, mutagenicity, and reproductive effects testing previously proposed by the Agency (48 FR 57866).

V. Discussion of Chemical Substances

A. Background

Section 4(e) of TSCA established an Interagency Testing Committee (ITC) to recommend to EPA a list of chemical substances and mixtures to be considered for testing under section 4(a) of the Act.

The ITC designated the category of halogenated alkyl epoxides for priority consideration in its Second Report, published in the Federal Register of April 19, 1978 (43 FR 16664). The ITC defined this category as "halogenated monocyclic aliphatic hydrocarbons with one or more epoxy functional groups." Seven specific compounds in this category are discussed in the ITC report: epichlorohydrin, 1,1,1-trichloro-2,3-

"EPA has had the opportunity to evaluate the only ongoing use of HFPO by a single firm, as an intermediate for the manufacture of fluorinated substances in an **enclosed process** . . .

"That company utilizes personal protective practices and engineering controls that the Agency believes are **sufficient to minimize exposure to HFPO**.

However, EPA is concerned that future HFPO manufacturing . . . associated with this use by **other firms** could present the opportunity for increased human exposure to this chemical substance."

52 FR 41296, 41297 (Oct. 27, 1987)

TSCA NOV Question to Chemours

- EPA asked Chemours to provide information about when it first learned about GenX-related contamination in and around the Fayetteville Works and Washington Works facilities, including in drinking water.
- Chemours will be providing a detailed response as part of its submission in March.
- In our formal response, we will address what Chemours has learned about DuPont's knowledge of these issues prior to formation of Chemours, to the best of our ability, based upon a review of documents and access to some (but not all) former DuPont employees.

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