

Testimony of Paul Kirsch
The Chemours Company
President, Fluoroproducts
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Committee on Oversight and Reform
Subcommittee on Environment

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Introduction and Opening Remarks

Thank you, Chairman Rouda, Ranking Member Comer, and members of the Subcommittee, for inviting me to testify today on behalf of The Chemours Company on issues related to perfluoroalkyl and polyfluoroalkyl substances (PFAS). My name is Paul Kirsch, and I am the president of the fluoroproducts business at Chemours. I have served in this role since I joined Chemours in June 2016. I am a member of the Chemours Executive Leadership Team and the executive sponsor of Chemours' Corporate Responsibility Commitments.

I am also a father of four children who are the light of my life. Like you, and others who have come before this Subcommittee in the past, I have a great desire and passion to leave my children and grandchildren with a cleaner and better world. Our entire Chemours team takes very seriously our obligation to manage the PFAS compounds in our manufacturing process in a responsible manner and ensure they are safe for their intended use. We don't merely sympathize with public concern over the presence of PFAS compounds in drinking water and the broader environment; we share it. People have an understandable concern over drinking water quality, and Chemours, like all companies, must do its part. Chemours has outlined its environmental commitments – commitments that are concrete and actionable – and backed those commitments up with definitive actions that address the pathways through which PFAS from our sites reach

the environment and drinking water. We owe that to our communities, to our neighbors, to our children, and future generations.

In this testimony, I will attempt to provide some insight about Chemours and information on:

- The fluorinated applications we manufacture;
- Our environmental commitments;
- Actions we have taken to address PFAS emissions at our sites and remediate historic environmental liabilities inherited from DuPont; and
- The non-polymer PFAS used during production at our sites.

About Chemours

First, briefly, some background on Chemours, where we came from, and where we are going. Chemours became an independent company just four years ago, through the spin-off of the performance chemicals segment of DuPont. Since July 1, 2015, Chemours has been an independent, publicly-traded company; we are not a subsidiary of DuPont, as some have mistakenly thought. Since that time, our company faced some very serious challenges given how DuPont unilaterally designed the transaction, including a deliberate, disproportionate assignment of two-thirds of DuPont's environmental liability and 90 percent of DuPont's active litigation to Chemours - liability and litigation resulting from DuPont's operating practices at dozens of manufacturing sites throughout DuPont's very long history. DuPont executives structured the spin-off agreement so that Chemours was obligated to indemnify DuPont for all assigned environmental liabilities should any regulatory, public or private plaintiff seek to hold DuPont accountable. Off-loading and abandoning its historic liability was not enough for DuPont, the

company also significantly disadvantaged Chemours financially through the strategic assignment of extensive debt to Chemours. Among the debt thrust on Chemours was a \$4 billion dividend that DuPont made Chemours pay to DuPont. These actions made the first 18 months an exceptionally harrowing time for the newly independent Chemours.

Even facing extensive challenges, from day one as an independent company, we committed ourselves to be a very different kind of chemistry company—one dedicated to taking a leadership role in environmental stewardship. We believe collaboration and transparency are critical to achieving this, and the remediation work that we have done, and continue to do, at the sites we inherited is done in partnership with local, state, and federal authorities and the communities in which we operate. That collaborative approach is emblematic of Chemours' bedrock commitment to environmental stewardship.

Chemours has taken a leadership role in supporting rigorous environmental safety standards, guidelines, and science-based regulatory oversight of both our processes and our products. In 2018, we announced ten ambitious Corporate Responsibility Commitment goals, including a 99% or greater reduction of air and water emissions of all persistent organic fluorinated compounds at all our sites globally. We know of no other company that has made such a commitment.

While our company name may not be very well known, Chemours enables products that are critical to modern life. Our products address the challenges we all face today and provide solutions for the future. Our materials make aerospace and automobile travel safer and more environmentally friendly. Our applications are used in aerospace computers and processors, hydraulics, and fuel systems. We provide various components of renewable energy installations and materials that help lower energy consumption and foster environmental safety in the

chemical and power sectors. Our innovative automotive applications improve fuel efficiency and reduce emissions in automobiles. In the technology space, our ingredients are used in the cellphones and smart tablets we use every day, and in the newest advances in communication technologies like 5G. And in medical applications, our products reduce the risk of equipment failures, infections, and unnecessary medical procedures. Catheters, saline bags, breathing tubes, some pharmaceuticals, and other critical medical necessities require PFAS for their creation. For many of the applications, there are no readily available replacements.

Collectively, these PFAS-enabled technological and medical advancements have been helping to drive the U.S. economy for this last generation. While Chemours has only existed as an independent company for four years, we operate with the mature understanding that economic progress and environmental protection are not contradictory; they must go together. Chemours is committed to working collaboratively and transparently with this Subcommittee, with federal and state regulators, and with the communities to understand the nature of the PFAS compounds we use, the environmental footprint of our manufacturing sites, and the actions we have taken since our creation to abate and remediate current and historic PFAS emissions from our manufacturing sites. There should be no mystery about what happens behind the fences of any manufacturing facility. We pledge to do our part to remove any perceived mystery about the current operations at our sites, and to provide you and the community with confidence that your voices are heard and questions addressed.

We at Chemours support the federal legislative efforts currently underway and their goals to develop a safe regulatory framework for PFAS compounds using a science-based approach. Chemours provided input to the Senate Environment and Public Works Committee on the PFAS provisions in the Senate NDAA bill and we support the measures that resulted from

that process in the Senate bill as passed. Chemours also supports EPA's process to determine whether legacy long-chain PFAS chemicals should be designated as hazardous substances under the Superfund law. However, we understand Congress may move on this issue legislatively and we would welcome the opportunity to engage with Members should that be the case.

Circumventing the existing regulatory process for determining hazardous substances and wastes, for example, could threaten the ability of companies across multiple industries to continue to provide patients with life-saving medical necessities and industries with applications that are essential for safety. PFAS are a broad and diverse range of compounds that have a variety of physical and chemical properties, health and environmental profiles, uses, and benefits, for which a "one-size fits all" approach would not be appropriate. Accordingly, Chemours supports focusing first on the highest priority substances, and then on other appropriate PFAS compounds on an expedited basis. We are committed to being a transparent and collaborative partner through the remainder of the legislative process.

Chemours' Proactive Corporate Responsibility Commitments

From its inception in 2015, Chemours has committed itself to be a chemistry company with a positive and responsible corporate culture. Central to this commitment is a strong focus on the well-being of our employees, our communities, and the environment. In the actions we have taken to reduce PFAS emissions into air and water and to fulfill remediation obligations for legacy areas that DuPont imposed upon Chemours, we have sought to demonstrate that we are prepared to meet the heightened demands placed on corporations in the 21st Century.

In the summer of 2016, during my first few months at Chemours, I spent time learning more about Chemours' fluoroproducts business, including its strengths and challenges, and

opportunities for further growth. Through this process, I considered the strategic priorities for the fluoroproducts business, including that sustainability would be one of those priorities. That decision was enthusiastically supported by our entire Chemours Executive Team and our Board of Directors who believe firmly in responsible growth – in doing well, by doing good. That began the process of identifying the Corporate Responsibility Commitments that we believe distinguish Chemours from other companies.

In 2018, Chemours publicly announced ten ambitious Corporate Responsibility Commitment Goals, including actionable environmental goals that address PFAS emissions, global warming, and landfill intensity. Those goals include:

- Chemours will reduce air and water process emissions of fluorinated organic chemicals by 99% or greater on a site-by-site basis. While other companies practice very similar chemistry, Chemours remains the only company in the chemical manufacturing industry that has made this public commitment.
- Chemours will reduce our greenhouse gas emissions intensity by 60% on a journey toward eventually becoming carbon-positive by 2050.
- Chemours will reduce our landfill volume intensity by 70%.

As an important part of our effort, Chemours continues to pursue research into new, sustainable products with the hope of bringing more sustainable products as soon as they are available. To date, we have added two innovative new products to our portfolio, a plant-based, renewably sourced, non-fluorinated durable water repellent, and our non-ozone depleting, low global warming potential refrigerant.

Action Chemours Has Taken to Address PFAS Emissions

Chemours' fluoropolymer sites use a small subset of PFAS compounds in the production process for manufacturing fluoropolymer-based materials. There are three primary U.S. based fluoropolymer sites, all three with a long manufacturing history predating the creation of Chemours. Chemours has already made a significant investment in emissions controls at these sites and continues to pursue additional opportunities to reduce our environmental footprint. The investment in state-of-the-art emissions control technologies at our fluoropolymer site in Fayetteville, North Carolina, and related remediation activity will cost the company at least \$200 million to implement. Further, as part of our Corporate Responsibility Commitments, we are conducting comprehensive Operations Sustainability Reviews at every one of our manufacturing facilities worldwide to further understand site emissions and the potential for community impact and to devise any needed action plans to reduce environmental impact further.

Efforts at Chemours' three major U.S. fluoropolymer facilities further underscore our commitment to environmental stewardship and cooperation. All three facilities have robust on-site and off-site remediation programs and are actively working to abate air and water process emissions.¹ Some highlights include:

- At the Washington Works site located in Washington, West Virginia, Chemours utilizes an extensive system of groundwater pumping wells that prevent off-site groundwater migration. Chemours uses a combination of air and water abatement technologies and recycling, to capture 99% of all GenX emissions at the site. Chemours is investing in reducing the remaining GenX emissions by another 50%. By the end of 2020, Chemours plans to install a carbon treatment system to remove historical groundwater PFAS

¹ As requested by the Subcommittee, we have provided PFAS sampling data from Washington Works, Chambers Works, and Fayetteville Works, as well as from other Chemours sites.

contamination from one of its groundwater production wells. With respect to the surrounding community, a robust public and private drinking water program has helped to assess contamination and provide treatment for years. The site has installed and maintains water filtration on 11 public water systems and 120 private water wells. It has also connected 70 residents to a filtered public water source.

- At Chambers Works, located in Deepwater, New Jersey, Chemours prevents migration of groundwater offsite through a pumping well system and sheet pile barrier. In cooperation with the U.S. Environmental Protection Agency (EPA) Region II and the New Jersey Department of Environmental Protection, Chemours has conducted extensive off-site water testing for PFAS-related contamination. Since our creation in 2015, Chemours has sampled 440 private drinking water wells within a 7-mile radius of the site and provided water treatment to 150 properties. The facility has also recently installed additional water and air abatement measures to its fluoropolymer processing facilities to reduce GenX emissions.
- At Fayetteville Works, Chemours is implementing a comprehensive abatement and remediation program. This program was initially launched by Chemours in 2016 and is now further reflected in a Consent Order agreed to by Chemours, the North Carolina Department of Environmental Quality and Cape Fear River Watch, approved and entered by North Carolina Superior Court in Bladen County on February 25, 2019. Among other things, the Consent Order sets rigorous standards for on-site groundwater remediation and requires the replacement of impacted off-site private drinking water supplies. To substantially reduce the potential for deposition from air emissions to impact groundwater, Chemours has already installed a suite of air emissions control equipment,

and by the end of this year will install a state-of-the-art thermal oxidizer that will control 99.99% of PFAS emissions vented to it.

As of August 30, 2019, Chemours has tested 1101 private drinking water wells, and North Carolina has tested 69 additional wells. We have identified 205 residential wells that have tested above the North Carolina provisional health goal of 140 parts-per-trillion (ppt) for GenX. In cooperation with North Carolina DEQ, Chemours has offered or will offer to connect these properties to public water, where that is feasible, or to provide granulated activated carbon (GAC) filtration systems. To date, GAC systems have been installed at 51 of those properties, and Chemours continues to provide residents with bottled water for drinking and cooking until installation of the remaining systems occurs.

I want to emphasize that Chemours' management has taken a far more robust and comprehensive approach to environmental issues at Fayetteville Works than had historically been taken. Before 2016, the site had taken steps, in compliance with TSCA, to abate 99% of GenX emissions from its Polymer Processing Aid manufacturing plant. However, in August 2016, shortly after I came to Chemours, I approved the formation of a project team to examine emissions at our fluoroproducts sites and identify opportunities for further abatement. The team brought forward two recommendations in early 2017. I launched a technical team to evaluate available technological options well before this matter garnered increased public visibility in the summer of 2017. By March 2017, the Chemours team had identified two potential abatement options to pursue: a filtration process combined with granular activated carbon, or a thermal oxidizer. I, along with others within Chemours senior management, fully supported the investment to install

either of those technologies, and we were planning to include the necessary funding in our company's capital budget process.

When GenX became a public issue in June 2017, we were already taking steps to proactively address site emissions and moved quickly to try to address community concerns. Chemours immediately acknowledged that the Fayetteville facility was the source of the GenX found in the Cape Fear River.² Without waiting for a request, Chemours immediately began capturing part of Fayetteville Works' wastewater containing the discharges for off-site disposal. By November 2017, in response to State regulators' requests, Chemours began capturing all process wastewater from its Fayetteville operations for off-site disposal. Because of these actions, GenX levels in the Cape Fear River dropped significantly, and GenX levels at drinking water inlets along the river began testing well below North Carolina's provisional health goal of 140 ppt. To date, Chemours has already reduced GenX levels in the Cape Fear River by more than 95% and reduced air emissions of GenX by 92% from 2017 levels. We are on track to complete the installation of our \$100 million emissions control technologies, which includes carbon filtration as well as a thermal oxidizer that uses high temperatures to break down fluorocarbon bonds and achieve our goal of a 99% reduction in PFAS emissions by the end of 2019.

In addition to proactively adopting a broad range of abatement and control measures at our facilities, Chemours has recently submitted proposals to NC DEQ for continuing to reduce PFAS loading to the river. While groundwater is a less substantial contributor to river loading,

² To be clear, the source of the material found in the River was not the GenX manufactured at Fayetteville Works, but rather materials produced as an unintended byproduct from other parts of the Fayetteville operations.

our proposals are representative of our comprehensive approach to addressing our environmental footprint.

Chemours has also sought to advance PFAS science and technology more generally beyond our labs and our manufacturing sites. We have invested millions of dollars in advancing analytical chemistry, including by developing new test methods and lab standards that allow, for the first time, the study and analysis of many PFAS compounds that were previously undetectable. In the spirit of collaboration and to advance science, we have independently shared these methods and standards with researchers from federal and state government agencies, academic institutions, and private laboratories to enhance their knowledge and detection capabilities. We likewise are working to develop new abatement and remediation technologies for PFAS.

Distinguishing between Current and Historic PFAS

We understand that the Subcommittee is focused primarily on the PFAS compounds PFOS, PFOA and GenX, and their persistence in ground and drinking water.

Of these compounds, Chemours does not use PFOS or PFOA in any of its manufacturing processes. No Chemours plant site had ever used PFOS in its manufacturing processes, even when they belonged to DuPont, and all our sites had ceased using PFOA prior to being transferred to Chemours. The information we can provide to the Committee related to PFOA use before July 1, 2015, is predominantly information provided by DuPont or 3M. The information was supplied to Chemours by those parties for pending PFOA-related litigation.

Before Chemours' formation in 2015, several companies did use PFOA, including DuPont which used PFOA as a polymer processing aid and for a period manufactured PFOA.

Under the U.S. EPA's PFOA Stewardship Program³, DuPont phased out its PFOA manufacturing operations well before its spin-off of Chemours in 2015.

As part of the shift away from PFOA under EPA's Stewardship Program, DuPont developed substances -- that came to be known as "GenX" -- as a commercial substitute for PFOA. Other fluoropolymer manufacturers that participated in the EPA Stewardship Program include Daikin, Asahi Glass (AGC), Arkema, 3M/Dyneon and Solvay Solexis. Given the broad range of product types that used PFOA, there are several technology alternatives that the industry is using, but in general, they are all utilizing similar short-chain chemical technology. GenX is one example of that. Another is ADONA, a polymerization processing aid that was commercialized by 3M, which is based on chemistry that is similar to GenX. Because the U.S. EPA's 2010/2015 PFOA Stewardship Program was only voluntary, PFOA is still being produced today in some parts of the world, including China, where PFOA production has increased significantly since the early 2000s and the use of PFOA in the production of fluoropolymers appears to continue for most Chinese fluoropolymer manufacturers.

GenX was designed by DuPont as a shorter-chain molecule that was expected to be rapidly eliminated from peoples' bodies and not degrade into the longer-chain PFOA if released into the environment. DuPont sought EPA approval for the manufacture and use of GenX under the Toxic Substances Control Act (TSCA). EPA and DuPont entered a Consent Order in 2009 permitting DuPont to manufacture and use GenX under conditions specified by EPA. Pursuant to this Consent Order, DuPont conducted extensive health and safety testing which indicated that GenX had a more favorable toxicological profile than PFOA, including rapid elimination from mammalian systems. We have shared these health and safety studies with the Subcommittee.

³ <https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/fact-sheet-20102015-pfoa-stewardship-program>

Following the 2015 spin-off, Chemours has continued to manufacture GenX at the Fayetteville Works facility pursuant to and in compliance with the 2009 TSCA Consent Order. GenX is primarily used for its intended purpose as a polymerization processing aid to enable the reactants in a polymerization process to come together and build polymer chains or molecules. It is used in this capacity at Washington Works and also used at Chambers Works. GenX is neither sold or made available to any other entity in the U.S., nor the main ingredient in the final fluoropolymer product. After GenX is used as a polymerization processing aid, it is recycled and reused, or captured and disposed of responsibly, with only minute and declining levels of emissions. One of the GenX substances is also formed as an unintended byproduct or impurity from other processes at the Fayetteville Works facility in North Carolina and, to a lesser degree, the Chambers Works and Parlin facilities in New Jersey.⁴ GenX is regulated in numerous ways beyond the 2009 TSCA Consent Order. Chemours' uses and discharges of GenX - at its Fayetteville Works, Washington Works, and Chambers Works facilities - are regulated by state environmental agencies through permits, as well as the Consent Order in North Carolina.

Additionally, in 2017, the State of North Carolina set non-binding health goals for GenX in drinking water. North Carolina initially set the goal at 71,000 parts per trillion, but soon after that revised the goal to only 140 ppt. EPA has also published a proposed Draft Toxicity Assessment for GenX, which is currently awaiting final publication in the Federal Register.⁵

In response to both North Carolina's and EPA's evaluations of the potential health impacts of GenX, Chemours provided extensive scientific information to North Carolina and EPA to enable both to conduct independent evaluations. Additionally, scientific research

⁴ Although the TSCA Consent Order contained an exemption for such byproducts, Chemours has taken measures to address discharges of that substance, however it may have been created.

⁵ EPA did not include a suggested drinking water goal, although it did calculate a key input in developing such a goal at a level four times higher than the equivalent level for PFOS and PFOA combined.

commissioned by Chemours has resulted in a recent peer-reviewed paper published in the Journal of Applied Toxicology which calculated a safe level for GenX in drinking water at 70,000 parts per trillion.⁶

While continuing to evaluate the scientific data on GenX, we at Chemours are taking significant actions to reduce human exposure to GenX, as outlined previously in this testimony, to levels well below those identified as a concern by regulators.

DuPont Unilaterally Crafted the Spin-off of Chemours

We are confident that the concrete actions we have taken and continue to take are addressing the current emissions at our operational sites and position today's Chemours as an industry leader in emissions control. There is a significant and undeniable improvement from the Chemours that existed when it was spun-off from DuPont in 2015. As noted earlier, while it was assigned only 20% of the income-generating businesses, the spin-off company was forced to absorb two-thirds of DuPont's environmental liabilities, over 90% of DuPont's active litigation and it was required to indemnify DuPont for actions and decisions DuPont took long before Chemours came into existence. Chemours leadership had no say or decision-making authority in the spin-off arrangements.

Moreover, DuPont stripped Chemours of financial resources to address the true scale of these liabilities: one of DuPont's last acts as a corporate parent was to extract a \$4 billion "midnight" dividend from Chemours. DuPont justified this by certifying "maximum" numbers for each of the liabilities it had assigned Chemours. Those "maximums" have turned out to be wrong—and wrong by hundreds of millions of dollars—but DuPont has claimed since the

⁶ Thompson CM, Fitch SE, Ring C, Rish W, Cullen JM, Haws LC. Development of an oral reference dose for the perfluorinated compound GenX. *J Appl Toxicol.* 2019;1–16. <https://doi.org/10.1002/jat.3812>.

transaction that Chemours has no recourse. These are all components of a separation agreement drafted unilaterally by DuPont and their legal counsel – an agreement into which the Chemours leadership had no voice, no input, and no independent legal representation – to which Chemours has been bound since our separation from DuPont on July 1, 2015.

Since those early days after the transaction, Chemours leadership has worked hard to put the company on solid financial footing. Thanks to the tremendous efforts of our employees, and difficult choices we were forced to make because of the financial condition DuPont left us in at the time of the spin-off, our company is on more solid financial footing today. While we continue to face environmental liabilities that DuPont created before 2015, throughout its long history that predated the formation of Chemours, our people remained steadfastly committed to doing the right thing. They remain committed to addressing the environmental shortcomings Chemours inherited and committed to being a different kind of chemistry company regarding how we operate.

In May 2019, Chemours filed a lawsuit against DuPont in the Delaware Court of Chancery challenging this attempt by DuPont to offload its legacy liabilities to Chemours. We have provided a copy of Chemours's Amended Complaint in this lawsuit to the Subcommittee, and the litigation currently remains pending.

The Amended Complaint sets out in detail how it took over 18 months following the July 2015 transaction for Chemours to achieve the financial stability necessary to begin substantially addressing the environmental issues we inherited. This enormous effort required Chemours to close multiple facilities, sell several lines of business, lay off 1,000 employees, restructure our debt, and negotiate a financial resolution with DuPont through which it contributed hundreds of

millions of dollars to settle then-pending PFOA claims. DuPont initially refused to provide any contribution to Chemours to settle the PFOA claims.

The Amended Complaint also explains that DuPont purported to justify the unfair and lop-sided terms of the spin-off transaction it engineered by certifying “high end (maximum) realistic exposures” for the accumulated environmental liabilities that it transferred to Chemours and forced Chemours to accept. Recent events have demonstrated that DuPont’s certified “maximum” exposures are systematically and spectacularly wrong. One example of many is the environmental issues faced at the Fayetteville Works site in North Carolina, an issue DuPont certified as a \$2.09 million liability but for which Chemours is incurring more than \$200 million in actual costs.

Conclusion and Closing Remarks

In our short four-year life, we at Chemours have faced head-on the fundamental challenge presented by our desire to supply the valuable fluoropolymers required by our customers while necessarily using chemistries that have become the source of public concern. Chemours made an unwavering commitment to manufacturing these valuable fluoropolymer materials in a manner that is protective of public health and the environment, even as we address the many legacy remediation issues imposed on us by DuPont. We have done this, and are committed to continuing to do this, through the development of cutting-edge science and technology, and by going beyond what the law requires.

As I stated at the start of this testimony, our entire Chemours team takes very seriously our obligation to manage the PFAS compounds in our manufacturing process in a responsible manner and ensure they are safe for their intended use. As I stated above, we don’t merely

sympathize with public concern over the presence of PFAS compounds in drinking water and the broader environment; we share it. Thank you for the opportunity to be here today, and for the consideration of our views.

We look forward to working with you and others transparently and collaboratively to develop a safe, science-based regulatory framework for PFAS compounds. I welcome the opportunity to discuss these issues with you and look forward to your questions.