Air Quality
ENVIRONMENTAL QUALITY

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Secretary

MICHAEL A. ABRACZINSKAS
Director

May 11, 2018

VIA ELECTRONIC MAIL AND CERTIFIED MAIL/RETURN RECEIPT REQUESTED

Mr. Brian Long, Plant Manager
Chemours Company - Fayetteville Works
22828 NC Highway 87 West
Fayetteville, NC 28306-7332

SUBJECT: Additional Technical Information Request
60-Day Notice of Intent to Modify Air Quality Permit No. 03735T43
The Chemours Company, Fayetteville Works

Dear Mr. Long:

On April 27, 2018, the Chemours Company responded to the Division of Air Quality's (DAQ) April 6, 2018, 60-Day Notice of Intent to Modify Air Quality Permit No. 03735T43 ("April 27 response"). The April 27 response was signed by Joel Gross, Chemours' legal representative. This response included fourteen exhibits, most of which are resubmissions of previously provided reports. Department of Environmental Quality (DEQ) staff have been reviewing all material, focusing on the new information.

The attachments to this letter detail DAQ's and Division of Waste Management's (DWM) request for additional technical information and clarification of your April 27 response, which spans multiple media. DEQ reserves the right to request additional information if responses are not perceived to be complete or if additional questions from the original material arise.

Please respond to these requests for information and clarifications by May 21, 2018. The agency is open to a meeting or conference call to further discuss these issues.

Sincerely,

Michael A. Abraczinskas, Director
NC Division of Air Quality, NC DEQ

c: Christel Compton, Chemours
Fayetteville Regional Office Files
William F. Lane
Sheila C. Holman
Joel Gross

ATTACHMENT - DEQ Additional Information Request

Exhibits 1a, 1b and 1c are air emissions source testing reports. DAQ has reviewed the testing performed during the week of January 22-26, 2018. The report for the testing during the week of February 26 to March 2, 2018 is still under review. Additional PPA process information for that test program was requested of the facility on March 2, 2018. DAQ has not received a response. The report for the testing performed during the week of March 19, 2018 was first submitted to DAQ as Exhibit 1.c. on April 27, 2018, and is under review. Additional information requests for all testing events will continue to be sent to Chemours independent of this request.

Additional technical information regarding upgrades to, or installation of, control technology:

Second upgrade to Division Waste Gas Scrubber: You state that the second upgrade to the Division Waste Gas Scrubber will be completed by the time of the October 2018 facility turnaround. Please provide further technical detail on the nature of this upgrade and the basis for Chemours' conclusion that this upgrade will result in a 40-80% reduction in emissions. Please also provide a detailed schedule for implementation of this upgrade, specifically analyzing whether the implementation date can be accelerated.

Installation of adsorption system to Division Waste Gas Scrubber: On March 9, 2018, the DAQ requested an engineering feasibility evaluation of controlling the vinyl ethers process emissions through a carbon adsorption bed. Please provide an update on that evaluation.

Additional technical information or clarification required from the April 27, 2018 Chemours response letter:

- General: Please identify whether Chemours considered making any operational changes to reduce the level of pre-control emissions of GenX compounds. If any options were considered, please identify those options and explain why they were not included the response. If no options were considered, please explain why Chemours did not perform this evaluation.

- Page 8 Clarify how emissions for Vinyl Ethers North (VEN) Process vents were calculated. The 4/27/18 response claims 4285 hours of operation. Chemours had previously provided 4248 hours of operation in a 3/29/18 email.

- Page 8 Container decontamination emissions do not appear to be included in the emissions calculations.

- Page 9 Polymer Processing Aid (PPA) Process - DAQ has requested production data from the PPA process for hydrolysis and vaporization to compare with the test run data. Until we receive the data, the lb/hr value cannot be verified.

- Page 12 Under paragraph (B)(1) Measures already taken a bullet point states:
  - "Made process changes such as vessel pressure set points to minimize/eliminate venting"

Please specify the processes, equipment and set points affected.

- Page 13 Carbon adsorption system six-month replacement cycle - please provide the technical evaluation and testing program outline to verify the suggested replacement cycle.

- Page 15 Please clarify the emission reductions for Vinyl Ethers South (VES). Are the annualized reductions realized through the reduction in PPVE campaigns? Are there other mechanisms for the reductions?

- Page 16 Please clarify the baseline that is being used for emissions when the thermal oxider control efficiency is applied. Does the baseline in the table at the bottom of page 16 include the control efficiency associated with the scrubbers?

- Page 15 & 23 Please provide the testing program outline to verify the scrubber efficiency improvement.

Additional technical information or clarification required from the April 27, 2018 Chemours response Exhibit 2 – HFPO-DA Baseline Emission Estimates:

- Page 3 Equipment leak example calculations were provided. Please provide the data associated with each piece of equipment, emission factor, and emissions calculated.

- Page 4 Please verify that the weight percent values used in the calculations match the values in Appendix A of the LDAR Report.

- Page 5 Please verify the Semiworks outdoor emissions. In Table 4: Annual Equipment Emissions from Monitoring Data, no outdoor emissions are provided for Semiworks. The LDAR Report includes outdoor fugitive emissions from Semiworks.

- Page 5 Section 2.3. How was component count data used to estimate indoor fugitive emissions for VEN? It appears that the ratio of emissions (indoor = 357 lb/yr, 60% and outdoor = 241 lb/yr, 40%) calculated in the LDAR report were used instead of the component count (indoor = 846, 67% and outdoor = 410, 33%)

- Page 6 Section 2.3. To calculate VES outdoor leak emission rates, the component counts are as follows: 59 for VES and 232 for VEN. According to the LDAR report, there are 410 outdoor components for VEN. Which is correct?

- Page 6 Section 2.3. How was component count data used to estimate indoor fugitive emissions for VES? It appears that the ratio of emissions (indoor = 18 lb/yr, 79% and outdoor = 5 lb/yr, 21%) calculated in the LDAR report were used instead of the component count (indoor = 303, 84% and outdoor = 59, 16%)

- Page 7 Section 3.1 discusses the Vinyl Ethers – North process. Section 3.1.2 states:
  - *"The source testing conducted on March 19, 2018 while producing PSEVE..."*

  However, Section 3.4 of the March 19, 2018 test report indicates that PPVE was run on VEN during the testing period. Please verify the campaign being run during the March 19th testing.

- Page 8 Section 3.2.1. It appears that the emissions used for VES PMVE/PEVE campaigns included the tested emissions from the aborted test. Please verify if this inclusion was intended.

- Page 9 Section 3.2.2. What data was used to calculate the emission factor (lb HFPO DA/kg PPVE produced)? Please verify if "room air" was included.

- Page 9 Section 3.2.3. Venting from HFPO-DA isotainers is mentioned. Is this the container decontamination? Please verify if emissions from the venting are included in the spreadsheet.

- Page 9 Section 3.3. The DAQ review of the test report summary states that all three test runs from the January 2018 testing should be included in the average. The PPA Process vent calculations do not include the second run during the January test program.

- Page 10 Section 3.3. The "non-hydrolysis" emissions from PPA were calculated using the January 2018 test data. The February 2018 data separates the vaporization from hydrolysis. Please explain why the Feb 2018 data was not used in this calculation.

Additional technical information or clarification required from the April 27, 2018 Chemours response Exhibit 3 – Third Party LDAR Program Review for Fayetteville Works Facility (January 31, 2018):

- Page 4 Please reconcile the component counts from your October 3, 2008 Notice of Compliance Status submission and the component counts in your January 31, 2018 LDAR report.

- Page 6 Please reconcile the outdoor emissions of 371 lbs/yr listed in Table 1-6 and the outdoor emissions of 314 lbs/yr listed in table 1-5.

- Page 8 In section 2.2, the alarm levels are stated as 0.5 parts per million, or 100 parts per billion. Are these two different set points on different monitors, or is one of these a typographical error? (0.5 ppm = 500 ppb)

Additional technical information or clarification required from the April 27, 2018 Chemours response Exhibit 11 – Modeling Report: HFPO-DA Atmospheric Deposition and Screening Groundwater Effects

- DAQ requests that Chemours and their contractor submit the electronic modeling files to the DAQ Air Quality Analysis Branch in order to conduct a thorough review, verify assumptions and model inputs.

- Modeling a batch process using an annual average emission rate introduces a high level of uncertainty. When the desired output is an annual average air concentration, as has been the historic use of AERMOD, this uncertainty is less. EPA's guidance for modeling under the DRR for the one-hour SO_2 standard required that actual hourly emissions were used. Modeling for wet deposition is similar to modeling for a one-hour standard in that the pairing of actual emissions with the period of precipitation is important in a refined modeling analysis. Please explain why hourly batch emissions were not modeled to determine concentrations and deposition.

- Our experience in modeling for deposition over an area such as a watershed, waterbody, or land area for estimating resulting concentrations in water or soil involve the use of evenly spaced receptors over the area of interest. How does the use of nested grids[1] of receptors with different spacing impact the groundwater modeling? Can more information be provided about the interface between the atmospheric and groundwater modeling efforts?

- How was the five-year period of meteorological data used to arrive at an estimate of "average annual total deposition?" It is standard practice in both PSD modeling for EPA and in modeling for toxic air pollutants in NC to use the highest results for the time period of interest over the five years modeled.

- Appendix C - Table C-1 Emissions of HFPO-DA – Annual Emission Rates, the October 2018 Case table needs to be corrected.

- In Table C-2 Modeled Stack and Fugitive Physical Source Parameters, a range of temperatures in degrees Kelvin are presented. Please provide justification for the effluent temperatures.

Additional technical information or clarification required from the April 27, 2018 Chemours response Exhibit 10 –*Assessment of Impact of Current and Anticipated Reduced Air Emissions on Groundwater Concentrations of HFPO Dimer Acid in the Vicinity of the Chemours Fayetteville Works* April 27, 2018

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[1] "For this modeling analysis, discrete receptors were used at a resolution of 200-m, extending out to 5-km from the approximate center of the Fayetteville Works. Receptors spaced at 400-m resolution were then used from 5-km to 10-km, and finally 800-m resolution receptors were used from 10-km to 20-km."

DEQ suggests that the document be revised and resubmitted for further review based on the following comments:

- There is no mention of the process to verify the steady state or impact model. Typically, a model will predict results in the future. Model verification occurs by taking samples in the future, comparing the sample results to the predicted results and then, if necessary, revising the model. Please submit the process to verify the steady state or impact model.

- Table 1 seems to indicate that once Phase 3 of the Air Emission reduction is completed that there will be 0 locations that exceed 140 ng/L and 18 locations that exceed 10 ng/L. However, these drinking water reductions will take many years to achieve. Please address the timeline required to meet the reductions as described.

- The model assumes homogeneous soils and groundwater flow throughout the contaminated area. Please address this comment and the impacts on the model.

- The model assumes that all of the exceedances occur in the Surficial Aquifer. Please discuss the impacts to the model with exceedances in the other aquifers.

- The text indicates that the creeks are discharge points, however other Chemours reports indicate that the creeks are both losing and gaining creeks. Please clarify the current text compared to other Chemours reports.

- Well depths used in the model are from resident's wells, however the data to confirm the depth of the well, the water bearing zone of the well, and screen interval was not included.
  Please update the submittal to include this information.

- Groundwater flow data used in the model is from an on-site pump test based on only one pumping well and one observation well. The test was conducted in the Surficial Aquifer only. Please respond to this comment and how it impacts the model.

- The concentrations of GenX in the soils off-site is assumed since there has been no off-site soil sampling. It is unknown how a change in the soil concentrations will affect the drinking water. Please respond to these comments and how they impact the conclusions of the report.