Division of Air Quality

March 9, 2020

MEMORANDUM

To: Heather Carter, Fayetteville Regional Supervisor

From: Gary L. Saunders, Stationary Source Compliance Branch

Subject: The Chemours Company – Fayetteville Works
Fayetteville, Bladen County, North Carolina
Facility ID. No. 0900009, Permit No. 03735T47
Performance Testing for HFPO Dimer Acid (GenX) Conducted on July 16-17, 2019,
Vinyl Ethers South (VES) by Weston Solutions, Inc.
Tracking No. 2019-261ST

Summary of GenX Test Program

Sources Tested

During the week of July 16-17, 2019, emissions testing was conducted at the Vinyl Ethers South (VES) process area. Gases from various reaction vessels and unit operations of the VES processes are vented through a caustic scrubber which reduces emissions of GenX (HFPO Dimer Acid) and its precursors (HFPO Dimer Acid Fluoride). During this test, VES emissions from the VES scrubber were combined with fugitive emissions collected from the enclosed areas of VES (sometimes referred to as "room air"). The gases were passed through a carbon bed adsorber for final control before being sent to the stack. During the testing, VES was producing perfluoro methyl vinyl ether (PMVE) and perfluoro ethyl vinyl ether (PEVE).

Sampling Method

Testing was conducted using a modified EPA Method 0010 found in the SW-846 compendium of *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*. This sampling train is a variation of the EPA Reference Method 5 found in 40 CFR 60, Appendix A. The Method 0010 train extracts a sample isokinetically from the gas stream, passes the sample through a temperature-controlled filter, through a temperature-controlled condenser and into a series of XAD-2 resin "traps" and impingers to capture and collect the materials that passed through the filter. The test method is designed to capture certain particulate and condensable materials for later recovery and analysis. Based upon previous experience with the method it has been modified to accommodate the anticipated concentration of the GenX emissions. A sampling time of 90-minutes per run was set as a way to assure that certain batch cycle characteristics were sampled in each process area while reducing the amount of sample dilution required for subsequent analytical techniques. The test results discussed in this review reflect the 90-minute sampling run time.

After sample recovery, the samples were sent to Chemours' contractor, Test America's laboratory in Denver, Colorado. GenX was extracted from the resin traps. This summary of results addresses the

results provided by Test America for Chemours. Laboratory analysis and quantification was performed using a liquid chromatography column and a dual mass spectrometer (LC/MS/MS).

Test Results

The reported GenX test results reflect corrected emission rates accounting for dilution and spike recovery values.

Vinyl Ethers South Test Results

GenX emissions testing of the VES Carbon Bed inlet and outlet and the VES stack was conducted on July 16-17, 2019 while producing PMVE and PEVE. Test Run 1, on July 16, 2019, was carried out under normal operation and included an ABR burnout cycle. Test Run 2 began on the morning of July 17, 2019 with normal operation and included an ABR burnout during part of the test run. The third run was conducted July 17, 2019 and was conducted under normal operation. The individual test runs and the average as reported by Weston is displayed in Table 1.

Each sampling run was at least 90 minutes in length. The inlet emission rate is the combination of the process gases through the scrubber and the room air emissions before the carbon bed. The outlet after the carbon bed is also displayed and used to determine removal efficiency. In addition to the carbon bed outlet, the emissions from the stack were also measured for comparison purposes. The tested values at the stack were all lower than observed at the carbon bed outlet. The per run emission rate and average is displayed in the table below.

Table 1. Summary of VES Test Results HFPO C3 Dimer Acid, July 16-17, 2019

Runs	Inlet		Outlet		Removal Efficiency	VES Stack	
	g/sec	Lb/h	g/sec	Lb/h	%	g/sec	Lb/h
R1	4.17E-04	3.31E-03	6.01E-04	4.78E-04	85.6	3.04E-05	2.41E-04
R2	8.50E-05	6.75E-04	1.71E-05	1.36E-04	79.8	2.17E-05	1.72E-04
R3	3.69E-05	2.93E-04	1.95E-05	1.55E-04	47.1	1.58E-05	1.25E-04
Average	1.80E-04	1.43E-03	3.23E-05	2.65E-04	65.9	2.26E-05	1.80E-04

Summary and Conclusions

NC DAQ staff members were on site during each day that source testing occurred. DAQ staff observed the source test teams, the sample recovery and the process operations. Based upon the onsite observation of the testing and review of the test report, NC DAQ concludes that the testing was conducted in accordance to the modified testing protocol submitted by Chemours and that the analytical results appear representative of the stack conditions and process operations during the testing.

Cc: Central Files – Bladen County
IBEAM Documents - 0900009