

Division of Air Quality

March 10, 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 Conducted on August 23, 2018 –
at Vinyl Ethers South (VES) and August 21-22, 2018 at Vinyl Ethers North (VEN) Carbon
Bed by Weston Solutions, Inc.
Tracking No. 2018-357ST

Summary of HFPO Dimer Acid Test Program

Sources Tested

During August 2018, emissions testing was conducted on two process area stacks. One series of test runs were conducted on August 23, 2018 at the Vinyl Ethers Scrubber Stack located at the Vinyl Ethers South (VES) process area. The VES Stack is a common stack through which emissions from VES Scrubber are combined with fugitive emissions collected from the enclosed areas of VES (sometimes referred to as “room air”). Gases from various reaction vessels and unit operations in the VES process area are vented through the caustic scrubber which reduces emissions of GenX (HFPO Dimer Acid) and its precursors (HFPO Dimer Acid Fluoride). Although the VES can produce perfluoropropyl vinyl ether (PPVE), the VES area will be used to produce perfluoromethyl vinyl ether (PMVE) and perfluoroethyl vinyl ether (PEVE) for the remainder of calendar year 2018. During the testing, the HFPO process was operating and the VES process was producing PMVE and PEVE. The HFPO monomer escaping from the process is not expected to be captured by the existing scrubber.

The other process area tested (August 21-22, 2018) was the carbon bed located at the Vinyl Ethers North (VEN) process area. The carbon bed controls fugitive emissions collected from the enclosed areas of VEN (sometimes referred to as “room air”). Gases from the outlet of the carbon bed are vented to the Division Stack from the VEN process area. Gases from various reaction vessels and unit operations in the hexafluoropropylene oxide (HFPO) and VEN processes are vented through the WGS, a caustic scrubber which reduces emissions of GenX (HFPO Dimer Acid) and its precursors (HFPO Dimer Acid Fluoride). The HFPO monomer escaping from the process is not expected to be captured by the existing scrubber. These gases were not sampled during this test.

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.

After sample recovery, the samples were sent to Chemours’ contractor, Test America’s laboratory in Denver, Colorado. GenX was extracted from the resin traps. The DAQ required split samples after extraction to be submitted for independent analysis. This summary of results only 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 HFPO test results reflect corrected emission rates accounting for dilution and spike recovery values.

Vinyl Ethers South Test Results

HFPO emissions testing of the VES scrubber was conducted on August 23, 2018 while producing PMVE and PEVE. Two runs were conducted during the test. Each sampling run was 90 minutes in length. The emission rate is the combination of the process gases through the scrubber and the room air emissions because of the current stack configuration. The per run emission rate and average is displayed in the table below.

Table 1. Summary of Stack Test Results for VES on August 23, 2018

Test Method	Run Number	HFPO Dimer Acid Emission Rate	
		lb/hr	g/sec
Modified Method 0010	1	2.62E-02	3.30E-03
	2	2.04E-02	2.57E-03
	Average	2.33E-02	2.94E-03

Vinyl Ethers North Area Test Results

Inlet and outlet emissions from the VEN carbon bed adsorber were measured on August 21 and 22, 2018 to determine the removal efficiency of HFPO Dimer Acid from the process fugitive emissions designated as “room air.” The carbon bed is currently used only for the control of room air. Each test run was 90 minutes in length. The process was operating normally and was producing PPVE.

Table 2. Summary of Stack Test Results for VEN Carbon Bed on August 21-22, 2018

Test Method	Run Number	HFPO Dimer Acid Emission Rate		
		Inlet (lb/hr)	Outlet (lb/hr)	% Removal Efficiency
Modified Method 0010	1	4.18E-02	8.53E-04	98.0
	2	5.17E-02	9.06E-04	98.2
	3	4.00E-02	7.94E-04	98.0
	Average	4.45E-02	8.51E-04	98.1

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