POET

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February 28, 2023

Gina McCann
Environmental Quality Analyst
State of Michigan Department of Environment, Great Lakes, and Energy
Air Quality Division, Bay City District Office
401 Ketchum Street, Suite B
Bay City, MI 48708

Dear Gina,

POET Biorefining-Caro LLC would like to respond to the below violation notices that were received on 2/10/23.

Process Description	Comments
FGFLOUR	Maintenance on Hammermill #5 baghouse could not be verified.
FGDDGSDRYERS	Thermal oxidizer below required 1468F. 4/28/22 6:00pm temp was 1461.3F
	8/25/22 12:00am temp was1439.5F 8/25/22 1:00am 1370.8F
	10/12/22 10:00am 1289.5F 10/12/22 11:00am 1291.2F
	Regenerative thermal oxidizer below 1643F. 10/12/22 10:00am 1436.9F 10/12/22 11:00am 1516.5F
FGDDGSDRYERS	Semi-annual report did not include deviations of thermal oxidizer or regenerative thermal oxidizer temperatures.
FGDDGSDRYERS	Excursion not reported for 4/28/22 temperature falling below normal operating values.

Maintenance on Hammermill #5 baghouse could not be verified – All records of Hammermill 1-4 inspections and maintenance are accounted for in our electronic database, Maximo. Although POET is confident that work is being performed on Hammermill 5, it appears there is not an electronic record of this. As a result, the preventative maintenance task associated to the job plan (#3660) has been updated to ensure that Hammermill 5 is included going forward.

On 4/28/22 the Thermal Oxidizer temperature was recorded at 1461.3F. Engineering stack testing was being performed during this time and intentional adjustments were made to lower the temperature of the TO. After testing was complete, the temperature of the TO was increased. To ensure we remained within compliance with emission limits, data was retrieved from Montrose and is provided below, demonstrating that the average values measured during this time were below the compliance values indicated in our ROP.

TO VOC

SUMMARY OF TEST RESULTS

COMPANY	POET Caro				
LOCATION	Caro, MI				
SOURCE	TO				
RUN NUMBER	1	2			
TEST DATE	4/28/2022	4/28/2022	Average	Compliance	
TEST TIME	15:55-16:31	16:57-17:33			
Stack Gas Parameters					
Temperature, °F	499.6	502.3	501.0		
Velocity, av. ft/sec	37.4	38.1	37.7		
Volumetric flow, acfm	76,868	78,302	77,585		
Volumetric flow, scfm	41,476	42,131	41,803		
Volumetric flow, dscfh	1,462,697	1,471,589	1,467,143		
Moisture, av. % vol	41.2	41.8	41.5		
Carbon Dioxide, av. % vol	9.5	9.5	9.5		
Oxygen, av. % vol	4.4	4.3	4.3		
Total VOC Emissions (FTIR)					
Emission rate					
lbs/hr	<1.45	<1.49	<1.47	9.00	Combined
HAP - Acetaldehyde Emissions					
Concentration					
ppmv wb	<0.23	<0.23	<0.23		
x10^{-6} lb/scf	<0.027	<0.027	<0.027		
Emission rate					
lbs/hr	<0.07	<0.07	<0.07		
HAP - Formaldehyde Emissions					
Concentration					
ppmv wb	0.11	0.11	0.11		
x10^{-6} lb/scf	0.009	0.009	0.009		
Emission rate					
lbs/hr	0.02	0.02	0.02		
HAP - Methanol Emissions					
Concentration					
ppmv wb	<0.34	<0.34	<0.34		
x10^{-6} lb/scf	<0.028	<0.028	<0.028		
Emission rate					
lbs/hr	<0.07	<0.07	<0.07		
HAP - Acrolein Emissions					
Concentration					
ppmv wb	<1.45	<1.51	<1.48		
x10^{-6} lb/scf	<0.211	<0.219	<0.215		
Emission rate					
lbs/hr	<0.53	<0.55	<0.54		
Total HAP Emissions					
Emission rate					
ppmv wb	<2.14	<2.19	<2.16		
lbs/hr	< 0.68	<0.72	<0.70		

TO PM

SUMMARY OF TEST RESULTS

COMPANY	POET Caro			
LOCATION	Caro, MI			
SOURCE	TO			
RUN NO	1	2		
TEST DATE	4/28/2022	4/28/2022		
TEST TIME	15:55-16:31	16:57-17:33	Average	**Compliance**
Stack Gas Parameters				
Temperature, °F	499.6	502.3	501.0	
Velocity, av. ft/sec	37.4	38.1	37.7	
Volumetric flow, acfm	76,868	78,302	77,585	
Volumetric flow, scfm	41,476	42,131	41,803	
Volumetric flow, dscfh	1,462,697	1,471,589	1,467,143	
Moisture, av. % vol	41.2	41.8	41.5	
Carbon Dioxide, av. % vol	9.5	9.5	9.5	
Oxygen, av. % vol	4.4	4.3	4.3	
Particulate Sample Parameters				
Time, min	60.0	60.0	60.0	
Volume, dscf	26.403	26.939	26.671	
Filterable particulate, mg	6.5	5.4	5.9	
Condensable particulate, mg	16.1	9.7	12.9	
Isokinetic Ratio, %	98.5	99.9	99.2	
Particulate Sample Emissions (Sample Train Front Half)				
Concentration				
grains/dscf	0.0038	0.0031	0.0034	
x 10^{6} lb/dscf	0.539	0.438	0.488	
lb/hr	0.79	0.64	0.72	
Condensable Particulate Emissions (Sample Train Back Half)				
Concentration				
grains/dscf	0.0094	0.0055	0.0075	
x 10^{6} lb/dscf	1.345	0.790	1.067	
lb/hr	1.97	1.16	1.56	
Total Particulate Emissions				
Concentration				
grains/dscf	0.0132	0.0086	0.0109	
x 10^{6} lb/dscf	1.883	1.228	1.555	
lb/hr	2.75	1.81	2.28	**4.00**

TO NOx

SUMMARY OF TEST RESULTS

COMPANY	POET Caro			
LOCATION	Caro, MI			
SOURCE	TO			
RUN NO	1	2		
TEST DATE	4/28/2022	4/28/2022		
TEST TIME	15:55-16:31	16:57-17:33	Average	Compliance
Stack Gas Parameters				
Temperature, °F	499.6	502.3	501.0	
Velocity, av. ft/sec	37.4	38.1	37.7	
Volumetric flow, acfm	76,868	78,302	77,585	
Volumetric flow, scfm	41,476	42,131	41,803	
Volumetric flow, dscfh	1,462,697	1,471,589	1,467,143	
Moisture, av. % vol	41.2	41.8	41.5	
Carbon Dioxide, av. % vol	9.5	9.5	9.5	
Oxygen, av. % vol	4.4	4.3	4.3	
NOx Emissions				
Concentration				
ppmv db	48.6	42.0	45.3	
$x10^{-6}$ lb/dscf	5.801	5.020	5.411	
Emission rate				
lbs/hr	8.49	7.39	7.94	
lb/Mmbtu	0.064	0.055	0.059	**0.10**

On 8/25/22 the Thermal Oxidizer temperature was recorded at 1439.5F and 1370.8F. Upon investigation, it was found that the Regenerative Thermal Oxidizer inlet damper suddenly closed at 10:55 PM on 8/24/22, which caused a drop in the TO temperature. At 11:38 PM on 8/24/22, the Thermal Oxidizer 3-hour average temperature dropped below the 1468F. Facility personnel adjusted production rates in an attempt to bring the TO temperature back above the minimum temperature, however those adjustments were unsuccessful. The dryers were brought offline at 1:49 AM on 8/25/22. This resulted in an excursion of 2 hours and 11 minutes and will be included on the semi-annual ROP report for 2H 2022.

On 10/12/22 the Thermal Oxidizer temperature was recorded at 1289.5F and 1291.2F. At 8:41 AM on 10/12/2022, the facility attempted to start up the dryers. After multiple unsuccessful attempts, the Thermal Oxidizer instantaneous temperature rose above and remained above the 3-hour average minimum at 11:26 AM. Therefore, it took 2 hours and 45 minutes after dryer startup for the Thermal Oxidizer to reach 1468 F, whereas the MAP allows for 45 minutes. This event will be included on the semi-annual ROP report for 2H 2022.

On 10/12/22 the RTO temperature was recorded at 1436.9F and 1516.5F. The isolation damper for the RTO was closed on at 2:54 PM on 10/11/2022 until 11:14 AM on 10/12/22, meaning that during this time process gases were not venting to the RTO, so no deviation occurred.

The semi-annual report did not include deviations of the Thermal Oxidizer or Regenerative Thermal Oxidizer temperatures on 8/25/22 or 10/12/22. This is because that report has not been submitted yet for 2H 2022, which is due by March 15, 2023.

The excursion for 4/28/22 was not reported, as the temperature decrease was intended during engineered stack testing. There is no requirement to notify the state for testing if it is not for compliance purposes. POET will ensure that future excursions are included on the semi-annual ROP report.

Sincerely,

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