



Shell Chemical Appalachia LLC
300 Frankfort Rd
Monaca, PA 15061

February 29, 2024

Mark Gorog P.E., Regional Manager Air Quality Program
Pennsylvania Department of Environmental Protection
Southwest Regional Office
400 Waterfront Drive
Pittsburgh, PA 15222

RE: PA-04-00740C LP Incinerator (C204A) Visible Emissions Malfunction Report

Dear Mr. Gorog,

Shell Chemical Appalachia LLC (“Shell”) is submitting this malfunction report to the Pennsylvania Department of Environmental Protection (PADEP) for visible emissions from the LP Incinerator on February 10, 2024.

This malfunction did not pose an imminent and substantial danger to the public health and safety or the environment.

- **Name and location of the facility**
Shell Polymers Monaca
300 Frankfort Road, Monaca PA, 15061
- **Nature and cause of the incident**
On February 10, 2024, starting at approximately 09:38, visible emissions (VE) were present at the LP Incinerator Continuous Vent Thermal Oxidizer (CVTO) stack. The VE was intermittent, visually appeared black in color, and occurred shortly after a restart of the CVTO. This was deemed a malfunction in accordance with Condition #018 of Section C of PA-04-00740C as it met the definition of “heavy smoke.” Note that the VE did not exceed 5-minutes in a consecutive 2-hour period per Condition #001 of Section D of PA-04-00740C.

The VE was attributed to periods of inadequate combustion air due to air fan issues. This will be detailed in a later section of this report.
- **Time when the malfunction or breakdown was first observed**
VE started on February 10, 2024, at 09:38:43
- **The date and time that the malfunction started and ended**
VE started on February 10, 2024, at 09:38:43 and ended on February 10, 2024 at 10:01:14.
- **An estimate of the emissions associated with the malfunction**
No excess emissions. The malfunction was visible emissions only.
- **The calculations that were used to determine that quantity**
No excess emissions.

Summary of VE elapsed time as determined by review of camera footage is captured below.

- 2 minutes and 56 seconds of VE observed between 09:38:43 and 10:01:14

Method 22 observations began shortly after the VE started and are included as Attachment A.

- **The steps, if any, that the facility took to limit the duration and/or quantity of emissions associated with the malfunction**

Quick troubleshooting commenced and waste gas was removed from the CVTO and re-directed to the Multipoint Ground Flare (Source ID C204B) until a path forward could be developed.

- **A detailed analysis that sets forth the Root Cause of the malfunction, to the extent determinable**

Starting at approximately 09:35, operations noted some instability of the CVTO process parameters. The VE followed shortly after. Both field and console troubleshooting commenced to determine the root cause of the instability.

The CVTO has 2 identical combustion air fans, A and B, with only one in service at a time. It was determined that the in-service air fan's (fan B) inlet damper, which is used to control how much air the fan can pull in, was not working correctly. Note that the damper is equipped with instrumentation that is controlled via the central control board. The specific issue was that percent open of the inlet damper in the field was not matching the control console reading, and the position of the damper was moving around erratically. This resulted in combustion air flow fluctuations and ultimately intermittent smoking. Following this discovery, waste gas was removed from the CVTO and redirected to the Multipoint Ground Flare, and fan B was shut down until a path forward could be developed. Later that day, the decision was made to re-introduce waste gas into the CVTO using the spare combustion air fan A. This occurred with no issues at 14:15 on February 10.

Additional troubleshooting of the out-of-service fan B continued to pinpoint the cause of the malfunctioning inlet damper. It was discovered that the actuator, which is what automates the movement of the damper, was not responding. Components of the actuator were assessed, and it was determined that the positioner, which is an electronic device that sends the required position signal to the actuator, was broken. The conclusion was that the positioner likely had failed during prior freezing temperatures.

- **An analysis of the measures, if any, that are available to reduce the likelihood of a recurrence of a malfunction resulting from the same Root Cause or contributing causes in the future**

The CVTO startup procedure will be updated to include a step to test the combustion air fan damper functionality prior to commencing startup.

- **To the extent that investigations of the causes and/or possible corrective action(s) still are underway on the due date of the report, a statement of the anticipated date by which a follow-up report will be submitted**

No follow up report is anticipated.

- **Corrective action is final or timeline for implementation**

The CVTO startup procedure will be updated by the end of March 2024.

February 29, 2024

If you have any questions regarding this matter, please contact me at (724) 709-2825 or william.watson@shell.com.

Sincerely,

A handwritten signature in black ink, appearing to read "William Watson". The signature is written in a cursive, flowing style with a large initial "W".

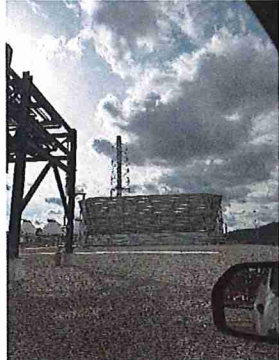
William Watson
Operations Manager

CC:
Scott Beaudway, Air Quality Specialist
Beth Speicher, Environmental Group Manager
Kristin Goddard, Environmental Compliance Specialist

Attachment A- Method 22 Form

Shell Polymers Monaca
Method 22 Visible Emissions Observation Form SPM-HSE-FO-0003

Observer Name: [REDACTED]
 Observer Title: Field Operator
 Date and Time (MM/DD/YY XX:XX): 2/10/24 9:39
 Sky Conditions: Cloudy
 Precipitation: None
 Wind Direction (direction from): E 70.15
 Wind Speed (m/s): 0.75
[Site MET Data \(Wind Direction 500QT-060A and Speed 500QT-050A\)](#)
 Visible Emissions Source: Continuous Vent Thermal Oxidizer (A-59003)
 Observation Location: A (MPGF/CVTO)
 Observation Picture: North of North Retension Pond



Observations

	Clock Time	Observation Period (when you are actually looking at stack)	Emissions Observed (when you actually see smoke)
Begin	2/10/2024 9:39		
	2/10/2024 9:40		
	2/10/2024 9:46		
	2/10/2024 9:47		
	2/10/2024 9:48	Non Stop	
	2/10/2024 9:49		
	2/10/2024 9:51		
	2/10/2024 10:00		
End	2/10/2024 11:39		
	11:55		
Compliant? (Y/N)	Y	Y	TOTAL= 2 Min 1 Sec

General Notes

Smoking out of CVTO stack upon start up in intervals. Smoke was dark black for 5 out of the 8 instances. The last one at 1000 last about 1 min 42 seconds and was dark black, then we put waste gas back to the ground flare.