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U.S. EPA Mailroom (E143-01)
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October 19, 2021

SUBJECT: UNITED STATES V. SHELL CHEMICAL LP
CIVIL ACTION NUMBER 2:18-CV-1404-EEF-JVM
FENCELINE MONITORING – CORRECTIVE ACTION PLAN
LDEQ AGENCY INTEREST NUMBER 26336

Dear Madam or Sir:

In accordance with the requirements in Section V, Paragraph 18 of Civil Action Number 2:18-cv-1404-EEF-JVM which became effective on February 6, 2019, Shell Chemical LP (Shell) hereby submits the enclosed Corrective Action Plan. This plan reflects the benzene fenceline monitoring data for the 14-day sampling period beginning July 15, 2021 through July 29, 2021.

If you have any questions related to this submittal, please contact Sarah Hudson at (504) 465-6041.

I certify to the best of my knowledge and belief that the information submitted is true, accurate, and complete.

Sincerely,

Jack Holden
Production Manager – Norco Manufacturing Complex
Attorney in Fact – Shell Chemical LP

SEH/mlc

Enclosure

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Appendix A
Corrective Action Plan

SHELL NORCO MANUFACTURING COMPLEX

CORRECTIVE ACTION PLAN

Benzene Fenceline Monitoring
40 CFR 63 Subpart CC
Reporting Period: 7/15/21 - 7/29/21

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY

The Shell Norco Manufacturing Complex (Shell) consists of both the refinery owned by Equilon Enterprises d/b/a Shell Oil Products US (SOPUS) and the chemical manufacturing plant owned by Shell Chemical LP (Shell Chemical).

As part of the Fenceline Monitoring Program required under 40 CFR 63 Subpart CC -- National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries, Shell is required to complete a Root Cause Analysis (RCA) per 40 CFR 63.658(g) and a Corrective Action Plan per 40 CFR 63.658(h) for the 14-day sample period from July 15, 2021 to July 29, 2021.

Additionally, as part of the Shell Chemical Consent Decree, Civil Action No. 2:18-cv-1404-EEF-JVM, Shell is required to complete an RCA and a Corrective Action Plan in accordance with Paragraph 18 and Appendix 1.8, Paragraphs 3(g) and (h) for the 14-day sample period from July 15, 2021 to July 29, 2021 to July 29, 2021.

For clarity and completeness, this report is broken out into a timeline of the affected monitoring periods with the periods' respective root cause analyses and corrective actions. The conclusion of this document includes the Corrective Action Plan requirements.

II. REGULATORY BACKGROUND

As required in 40 CFR 63.658(g) and Paragraph 18 and Appendix 1.8, Paragraphs 3(g) of the Shell Chemical Consent Decree, the RCAs discussed herein were begun within 5 days of determining the action level had been exceeded, and the RCAs and initial corrective action analyses were completed and initial corrective actions were taken within 45 days after determining the exceedance.

While corrective actions were completed within 45 days, the period Δc for the next 14-day sampling period for which the sampling start time began after completion of the corrective actions was greater than benzene action level of 9 µg/m3. As such, a Corrective Action Plan was required to be developed per 40 CFR 63.658(h) and Paragraph 18 and Appendix 1.8, Paragraphs 3(h) of the Shell Chemical Consent Decree and submitted to the Administrator within 60 days after receiving the analytical results indicated that the Δc value for the 14-day sampling period following completion of the initial corrective action(s) was greater than 9 µg/m3. This document serves to meet the Corrective Action Plan submittal requirements and includes the following:

- Corrective actions completed to date;
- Additional measures proposed to reduce benzene fenceline emissions; and,
- A schedule of implementation for such measures.

III. MONITORING RESULTS AND TIMELINE

Tables III-1 and III-2 below outlines the timeline beginning with the July 15, 2021 through July 29, 2021 period and includes sample results and regulatory requirements for clarity.

Table III-1: Monitoring Results						
	Refinery RMACT		Chemical CD			
14-Day Period	Period Δc [μg/m³]	Annual Rolling Average Δc [μg/m³]	Period Δc [μg/m³]	Annual Rolling Average Δc [μg/m³]	Comments	Reference Section in Document
7/15/21 – 7/29/21	16.53	13.64	16.53	12.75	Initial period in which the Δc and annual rolling average Δc were both above the action level.	Section IV
7/29/21 – 8/12/21	9.03	13.66	9.03	12.78	Root cause determined to be different than previous periods.	Section V
8/12/21 – 8/26/21	7.90	12.90	7.90	12.78	Period Δc was under action level.	N/A

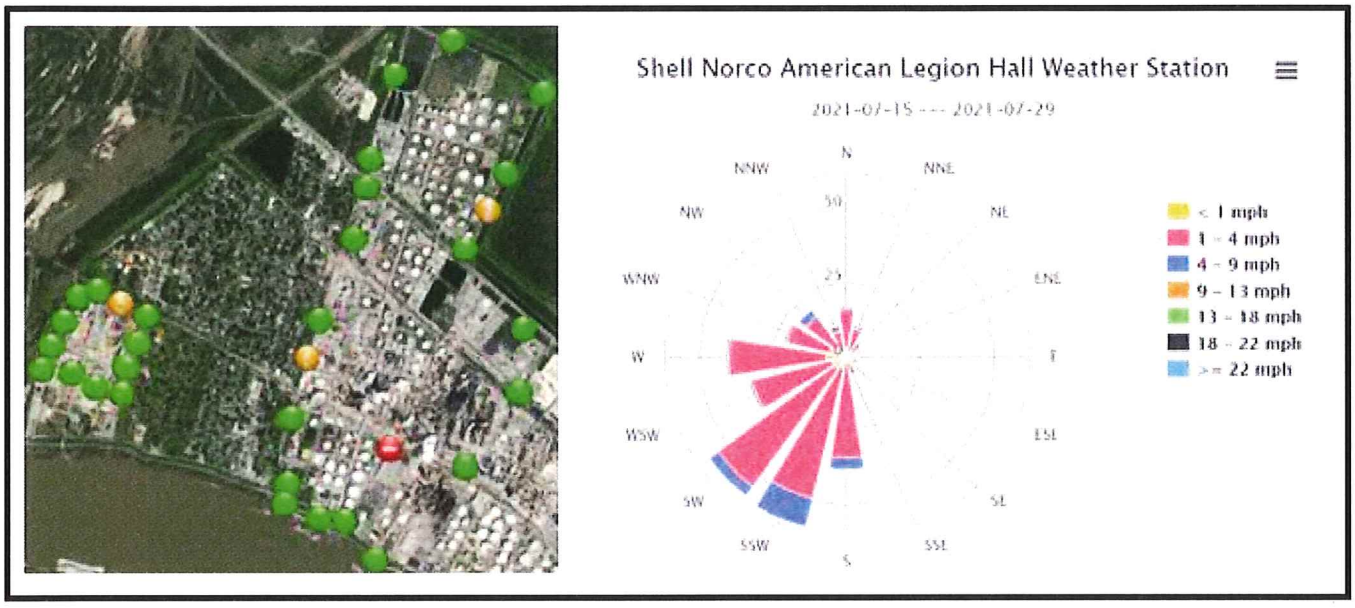
Table III-2: Timeline and Regulatory Dates					
14-Day Period	Date Sample Results Received	RCA Start Date *(Regulatory Req't Date)*	RCA Complete Date *(Regulatory Req't Date)*	Corrective Action(s) Completion Date	Corrective Action Plan Required & Due Date
7/15/21 – 7/29/21	8/10/21	8/13/21 *(8/15/21)*	9/22/21 *(9/24/21)*	7/22/21	Yes - 1st period after corrective actions complete was above the action level. Due 10/22/21
7/29/21 – 8/12/21	8/23/21	8/26/21 *(8/28/21)*	10/6/21 *(10/7/21)*	8/10/2021	No, 1st period after corrective actions were complete was under the action level
8/12/21 – 8/26/21	9/7/21	N/A	N/A	N/A	N/A

IV. RCA AND CORRECTIVE ACTION: JULY 15, 2021 – JULY 29, 2021

A. 14-Day Period Background

During the 14-day sample period from 7/15/21 – 7/29/21, the period Δc was above the action level, and the annual rolling Δc with the inclusion of this period exceeded the action level. A wind rose and map of the monitoring locations is provided below wherein the red points show the monitors above the action level.

Table IV-1: Data for 7/15/21 – 7/29/21	
ΔC	**Benzene (µg/m³)**
Period ΔC	16.53
Refinery Annual Rolling ΔC	13.64
Chemical Annual Rolling ΔC	12.75
Sample point(s) higher than action level:	**Benzene (µg/m³)**
B-11	17.00



Figures IV-1 and IV-2: Map of Monitoring Results and Wind Rose for 7/15/21 – 7/29/21

B. Root Cause Analysis

Upon notification of the sample results, an immediate review of data readings of the #2 and #7 eGC Trailer mounted benzene monitors which is deployed in the vicinity of B-11 monitor was conducted. A field investigation was also conducted to identify if there were any potential sources of benzene emissions that would impact the sample point location with the elevated reading. Winds were primarily out of the Southwest/South-Southwest during this sample period (see Figure IV-2), so the investigation began with potential sources in that vicinity of the above referenced sample point location (see Figures IV-1 & IV-2).

C. Source Description

Different materials from the refinery and chemical process units are received into the storage tanks in the vicinity of Fenceline monitor B-11. A field visit to the area with handheld benzene meters was conducted around the possible sources; however, no elevated readings were detected. Storage tanks located in the area include the following:

- K-558, which stores spent sulfide and spent caustic,
- XC-429, which is an IFR storing Slop oil and equipped with vent gas compressors routed to a Flare system for control,
- W-414, napthenic caustic,
- F-483, Diesel feedstock, HVGO Feedstock, and Light Naphtha Feedstock, and
- F-438, F-436, and F-487, storing Heavy Gas Oils.

The eGC trailer #2 data was found to be unreliable during this period and has since been remedied. Investigation activities also included gathering relevant operational information on conditions and or actions relevant to the tanks adjacent to the monitor B-11 to identify any process abnormalities as potential contributing factors to the elevated readings on the eGC and the Fenceline monitor.

After careful consideration and analysis, the cause of the spikes at B-11 could not be attributed to a specific event or piece of equipment. Due to the location of this monitor, this area could have been impacted by outside activities occurring in the vicinity of the monitor, including mowing lawn, train and traffic movements, third party neighbors, etc. that would be outside of Shell's control.

D. Events

No specific events related this RCA were identified during this root cause investigation.

E. Corrective Actions

Table IV-2: Corrective Actions for 7/15/21 – 7/29/21 Period

Corrective Actions	Completion Date	Comments
Identify any and all activities which took place in the affected area during this time.	N/A	During this period, Tank F-491 was being cleaned.
Identify any process abnormalities as potential contributing factors to the elevated readings on the eGC and the fenceline monitor (B-11).	N/A	Except for the tank cleaning operations, no additional process abnormalities were identified (review of shift reports). Tank integrity inspections did not note any deficiencies.
The nitrogen pressure was reduced.	7/18/2021	Reducing the nitrogen pressure reduces benzene emissions.
The turnaround group updated their procedure to ensure this would not occur during the next tank turnaround.	7/22/2021	This procedural update will prevent this from happening in the future.

F. Conclusion

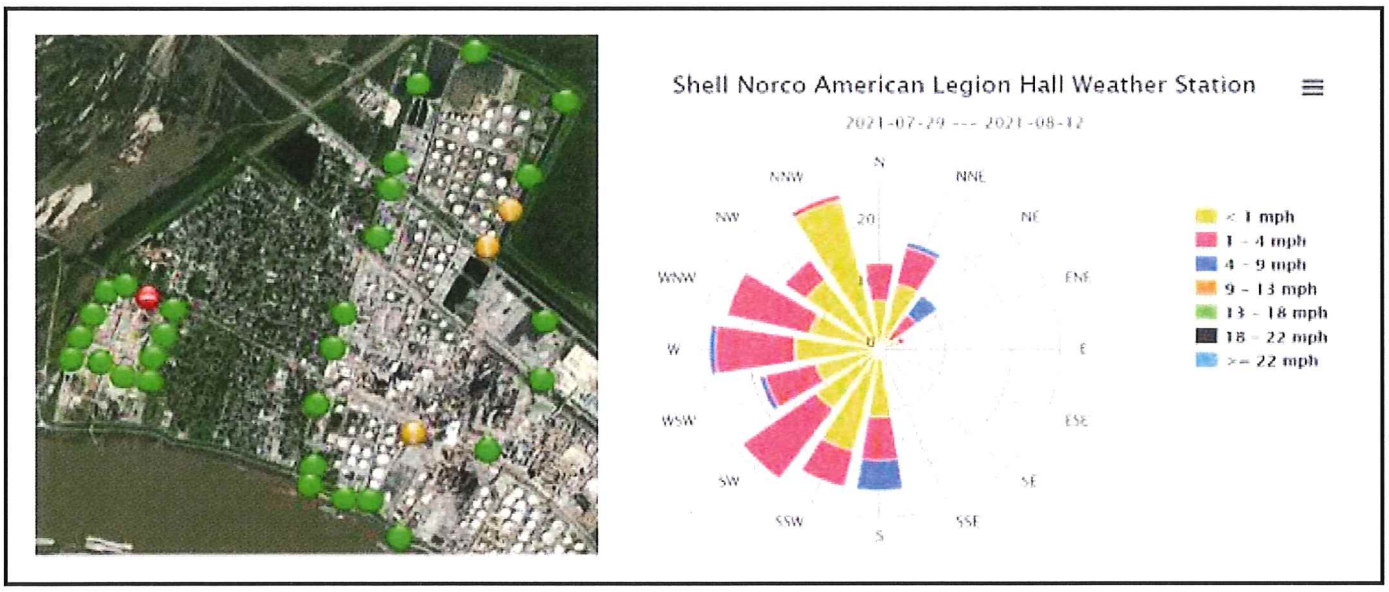
The corrective actions for the 7/15/21 – 7/29/21 sampling period were completed by 7/22/21. As stated above, the investigation did not reveal any known sources of elevated benzene for this period. The period ΔC for the next sample period following these results (7/29/21 – 8/12/21) was not below the action threshold; however, the results for B-11 were below the threshold.

V. RCA AND CORRECTIVE ACTION: JULY 29, 2021 – AUGUST 12, 2021

A. 14-Day Period Background

During the 14-day sample period from 7/29/21 – 8/12/21, the period Δc was above the action level, and the annual rolling Δc with the inclusion of this period exceeded the action level. A wind rose and map of the monitoring locations is provided below wherein the red points show the monitors above the action level.

Table V-1: Data for 7/29/21 – 8/12/21	
ΔC	**Benzene (µg/m³)**
Period ΔC	9.03
Refinery Annual Rolling ΔC	13.66
Chemical Annual Rolling ΔC	12.78
Sample point(s) higher than action level:	**Benzene (µg/m³)**
WB-01	9.50



Figures V-1 and V-2: Map of Monitoring Results and Wind Rose for 7/29/21 – 8/12/21

B. Root Cause Analysis

Upon notification of the sample results, an immediate review of data readings of the #1 and #4 eGC Trailer mounted benzene monitors which is deployed in the vicinity of WB-01 monitor was conducted. A field investigation was also conducted to identify if there were any potential sources of benzene emissions that would impact the sample point location with the elevated reading. Winds were primarily out of the West, and Southwest/South-Southwest during this sample period (see Figure 1), so the investigation began with potential sources in that vicinity of the above referenced sample point location

C. Source Description

During this 14-day period, high readings were seen at both west site trailers (#1 and #4). The West site attempted to troubleshoot the source and reduce the sour water feed to the T-Unit. Troubleshooting efforts included:

- Reducing sour water flow;
- Skimming hydrocarbons off of XC-7005;

- Taking additional benzene check samples;
- Verifying tank line ups were correct;
- Verifying no abnormal odors detected around west site fence line;
- Monitoring dissolved oxygen levels and adjusting air accordingly; and
- Continue to monitor eGC trailers 1 and 4 for elevated benzene readings.

Although troubleshooting occurred, the source of the benzene excursion during this period was not pinpointed to a specific source. The following two-week period after this period showed no continued sign of high benzene in this area.

D. Events

No specific events related this RCA to the first period, 7/15/2021 – 7/21/2021, were identified during this root cause investigation and no additional events during this sampling period, 7/29/21 – 8/12/21, were noted.

E. Corrective Actions

Table V-2: Corrective Actions for 7/29/21 – 8/12/21 Period

Corrective Actions	Completion Date	Comments
Identify any and all activities which took place in the affected area during this time.	9/1/2021	No non-routine activities took place during this time.
Identify any process abnormalities as potential contributing factors to the elevated readings on the eGC and the fenceline monitor (WB-01).	9/15/2021	No additional process abnormalities were identified (review of shift reports). Tank integrity inspections did not note any deficiencies; and, LDAR monitoring data did not note any leaks in this area for the period.

F. Conclusion

The corrective actions for the 7/29/21 – 8/12/21 sampling period were completed by 9/15/21. As stated above, the investigation did not reveal any known sources of elevated benzene for this period. The period ΔC for the next sample period following these results (8/12/21 – 8/26/21) was below the action threshold.

VI. CORRECTIVE ACTION PLAN

As required in 40 CFR 63.658(h), the following sections address the Corrective Action Plan Requirements.

A. Corrective Actions Completed to Date

All corrective actions completed thus far have been identified in the respective periods' sections (Sections IV – V).

B. Additional Measures

In addition to the immediate corrective actions identified in the RCA periods above, Shell has continued to investigate the installation of benzene analyzers on the sour water streams which can provide real time data and

accurately identify the sources of high benzene. This will allow a quicker response time to identify and correct any excursions in the sour water system.

C. Schedule of Implementation

The following outlines the proposed schedule for implementation of these additional measures:

Task	Target Date	Status
Began increased sour water sampling	8/1/2021	Complete
Determine baseline benzene concentrations in the sour water system from the individual contributing streams	10/1/2021	Complete
Determine feasibility of installing online benzene analyzers	12/1/2021	In progress
Installation of benzene analyzers, if deemed feasible	12/1/2022	In progress