Analysis of the Increased Benzene Levels Recorded at the Fenceline of Chiquita Canyon Landfill – July 29 and August 2, 2025

On July 29 and August 2, 2025, there were two separate events with elevated benzene readings at air monitoring station MS-01, which is at the fenceline of the Chiquita Canyon Landfill (CCL):

- July 29, 2025 @ 14:00
    - Maximum hourly benzene concentration = 7.63 ppb
- August 2, 2025 @ 16:00
    - Maximum hourly benzene concentration = 27.42 ppb

SCS Engineers (the contractor who is operating Chiquita's air monitoring network) worked with TricornTech (TCT; the company manufacturing the micro-GC instruments that CCL/SCS uses to measure the concentration of benzene and other Volatile Organic Compounds, or VOCs, around and near the landfill) to review the elevated benzene readings and determine if the data was valid.

Following a quality control/quality assurance (QA/QC) analysis of the data collected during these two events, TCT concluded that both events were likely caused by sensor malfunctions and/or external interferences and were deemed not valid. SCS reviewed the TCT findings and concurred with their assessment. The TCT analysis was provided to SCS on August 4, 2025. Following their review, SCS shared this information with the South Coast AQMD staff, who also concurred with this assessment.

Below is additional information on this data review.

SCS Air Monitoring Network

Figure 1 shows the location of the 12 air monitoring stations that are part of CCL air monitoring network operated by SCS. MS-01 (circled yellow) is located at the fenceline of CCL. Other fenceline sites include MS-02, MS-03, MS-04, and MS-05. Stations MS-06 through MS-12 are community sites and measurements conducted at these latter stations represent air quality conditions experienced by people living in Val Verde, Castaic, and other areas near CCL. Note that AS-01 is not part of the SCS network.

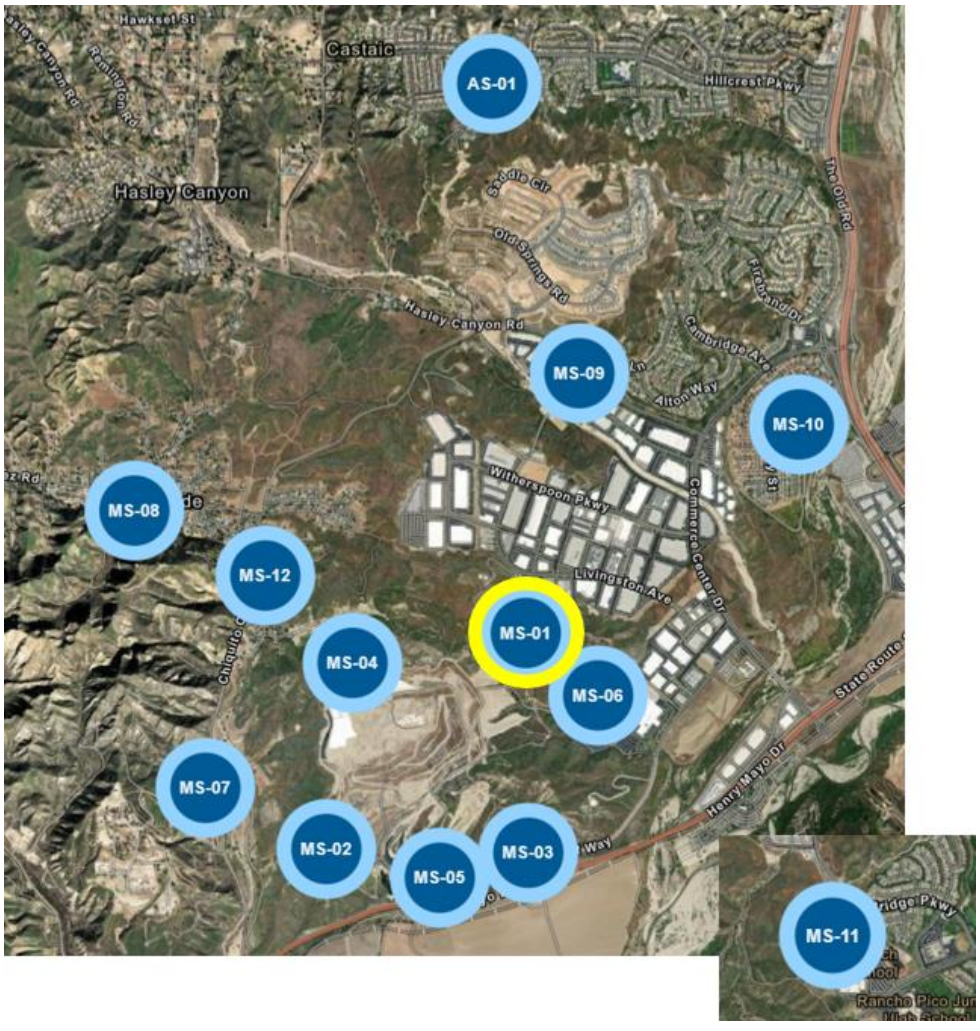

Figure 1. Map showing the location of the 12 air monitoring stations that are part of the CCL air monitoring network.

July 29 and August 2, 2025 Benzene Events at MS-01

Figure 2 shows a time series of recent benzene measurements taken at MS-01, with the elevated concentration events on July 29, 2025 and August 2, 2025 highlighted. Only the event of August 2, 2025 triggered a notification email because the concentration of benzene measured at that time was above the acute (1-hour) Relative Exposure Level (REL) for this compound. The acute REL for benzene is 8 parts per billion (ppb) and was determined by the Office of Environmental Health Hazard Assessment (OEHHA).

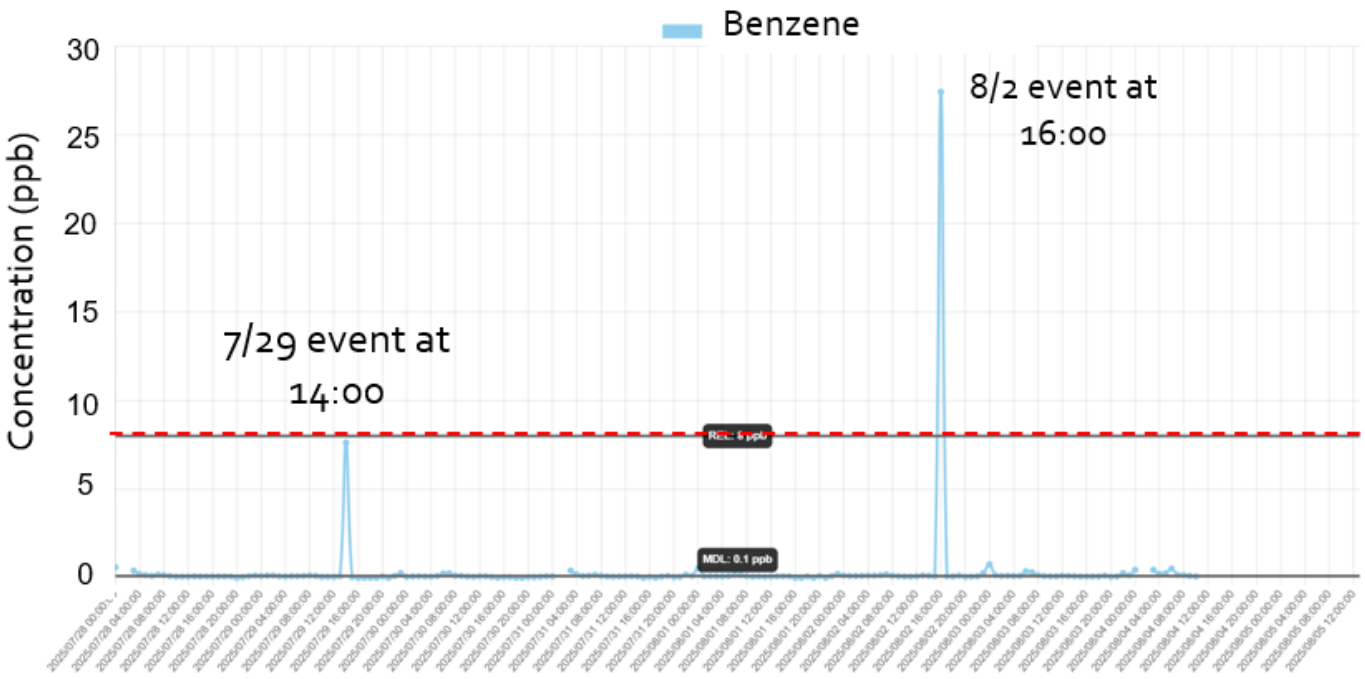

Figure 2. Time series showing the two peaks of benzene that were measured at MS-01 on July 29, 2025, and August 2, 2025. The red dotted line represents OEHHA's acute (1-hour) REL for benzene (8 ppb)

Analysis of July 29, 2025 Benzene Event

Figure 3 below is an instrument chromatogram showing the results of micro-GC measurements on July 29, 2025, at 14:00 at MS-01. The red line (ambient air sample) is indicative of contamination and/or stability issues with the instrument's sensors. This red line should be close to zero throughout the measurement and closely resemble the blue line (STD gas peak – an instrument chromatogram from a quality control analysis performed earlier that day). As seen below, on July 29 at 14:00, the instrument chromatogram was erratic and unstable, indicating it was experiencing a malfunction that resulted in the instrumental software miscalculating the concentrations of chemical species during this analysis. Based on a review of this data, a determination was made that benzene (and toluene and other VOCs) collected during this sample were inaccurate and, therefore, invalid. Figure 4 below is an instrument chromatogram representative of a valid sampling event. The red line (ambient air sample) is smooth with clear peaks for each chemical, allowing for accurate identification and calculation of concentration.

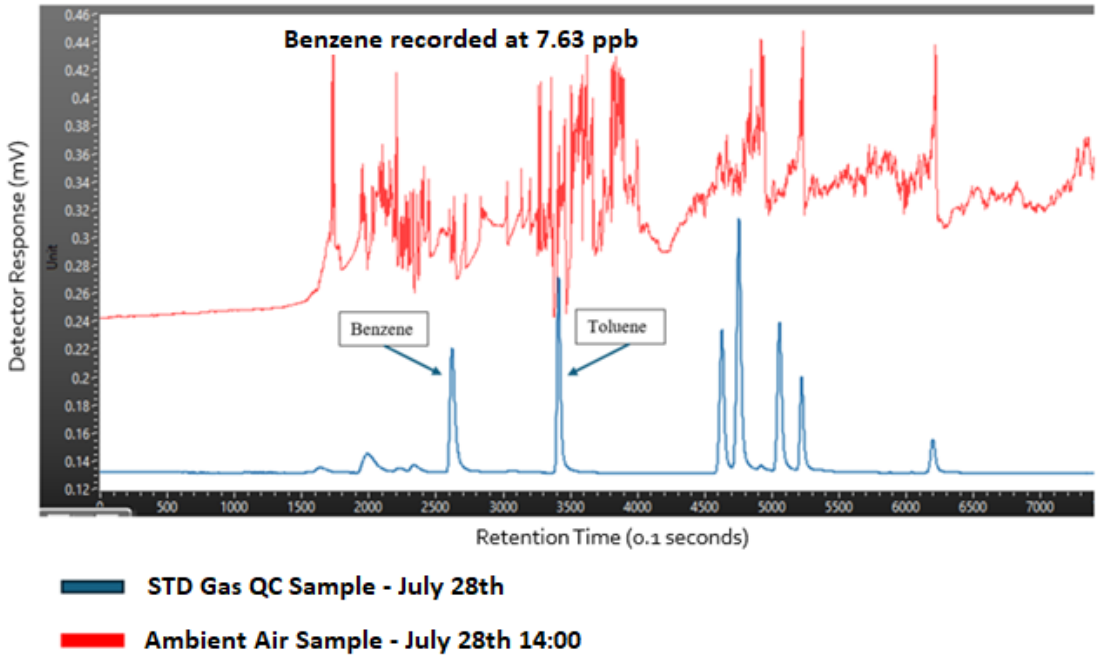

Figure 3. Chromatographic data corresponding to benzene, toluene, and other volatile organic compounds measured on July 29, 2025, at 14:00 at MS-01.

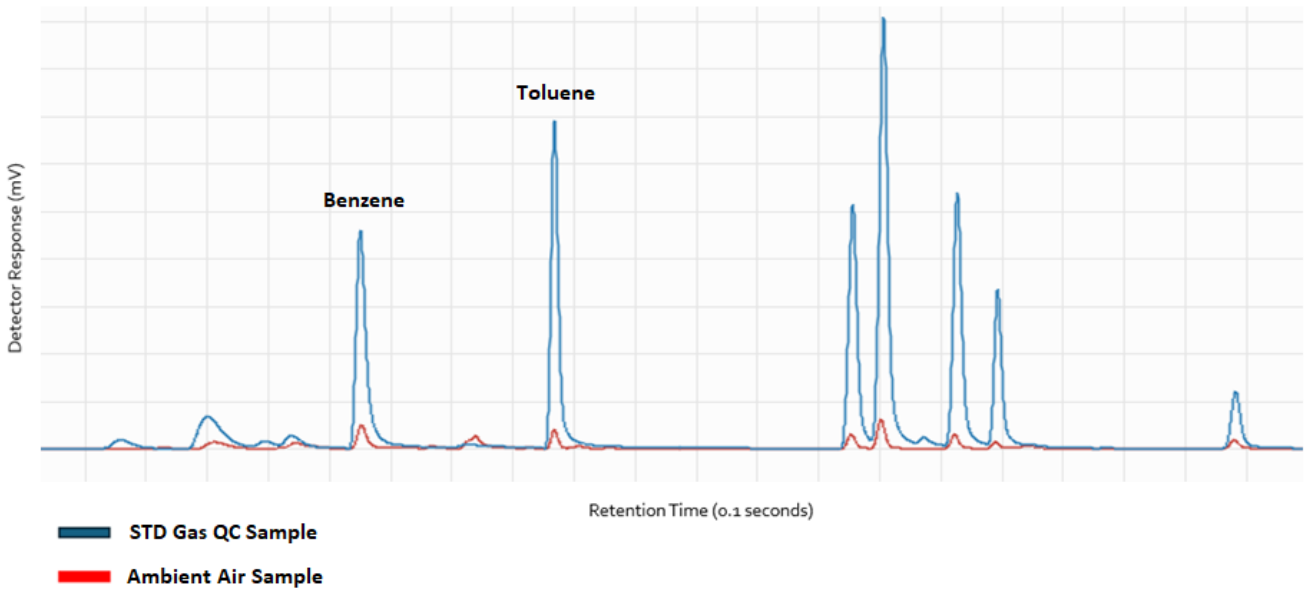

Figure 4. Example chromatographic data for a valid sampling event.

Analysis of August 2, 2025 Benzene Event

Figure 5 below is an instrument chromatogram showing the results of micro-GC measurements on August 2, 2025, at 16:00 at MS-01. Like the July 29 event, the red line (ambient air sample) is again very erratic and unstable. This behavior is the result of a malfunction of the instrument's sensors and was the main indication that the benzene (and toluene and other VOC) measurements collected at 16:00 were inaccurate and, therefore, invalid.

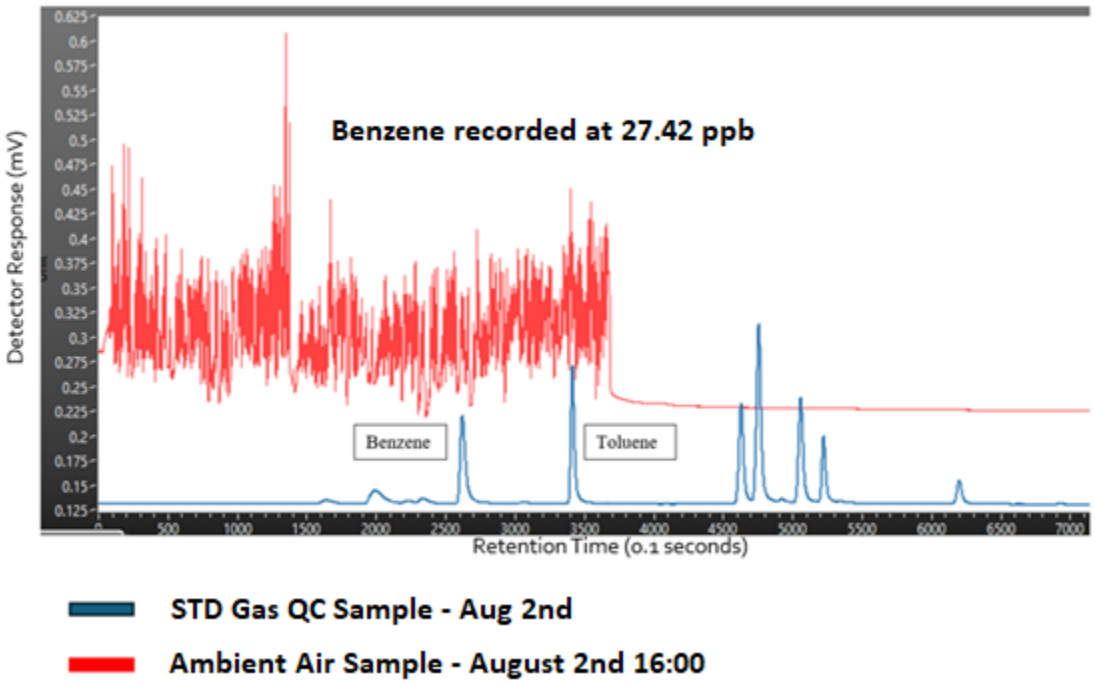

Figure 5. Chromatographic data corresponding to the benzene, toluene, and other volatile organic compounds measured on August 2, 2025, at 16:00 at MS-01.

Additional Actions Taken by SCS

In parallel to the instrumental data QC review, and to better understand what may have contributed to the elevated measurements of benzene, SCS interviewed CCL personnel and reviewed records. They determined no unusual activity occurred on-site on July 29 or August 2, 2025 that would cause increased benzene levels at MS-01. In addition, no calibration or station maintenance activity took place on July 29 or August 2, 2025, which could have contributed to the elevated benzene measurements.

Conclusion

SCS worked with TCT on a thorough QA/QC analysis of the benzene (and toluene and other VOC) data collected at MS-01. This analysis suggests that the benzene events at this station on July 29 and August 2, 2025 are invalid and likely due to sensor anomalies/external interferences with the sensor.

As a result, the instrument sensor (the part of the instrument responsible for the faulty benzene, toluene, and other VOC measurements) has been replaced, and the instrument is now reporting accurate VOC data.

TCT will conduct additional analysis to determine the root cause of the interference and malfunction and will provide SCS with recommendations on how to minimize false positive readings in their VOC instruments.