

**O.Reg. 206/24- Air Pollution – Discharge of Benzene from INEOS Styrolution 1-Hour Benzene Limit Exceedance (August 28, 2024)**

Ontario Regulation 206/24: Air Pollution – Discharge of Benzene from INEOS Styrolution requires a report to be submitted to the Ministry of the Environment, Conservation and Parks District Manager of the Sarnia District Office, the Chief of the Aamjiwnaang First Nations (or designate), and a provincial officer at the Ministry’s Spills Action Centre within 14 days after an exceedance notification. This report describes the discharge above 90 µg/m<sup>3</sup> over a one-hour period that occurred on August 28, 2024, at eGC#3 (MECP Reference #1-AVHIY5).

This report contains the information requested in the regulation to the best of our abilities, with the understanding that eGC emission contributors cannot be considered with 100% certainty, as it is difficult to find an exact source of emissions from such low concentrations. However, INEOS has made every effort reasonable to attempt to identify any potential processes, events and/or sources from onsite activities during this period that may have contributed to the final value. The attached table summarizes these findings.

**Summary of Exceedance:**

<b>Time Period:</b>	August 28, 2024 at 9:00am
<b>Location:</b>	eGC#3
<b>Measured Benzene Concentration:</b>	39.39ppb (125.65ug/m <sup>3</sup> )
<b>Operating Condition:</b>	Shutdown/idle state
<b>Wind Direction:</b>	WNW
<b>Wind Speed (km/h):</b>	24.59 (during 10-minute peak) 4.52 (hourly average)

**Analysis of the Contravention:**

eGC#3 is located on the east side of Styrene II (see maps below) next to the non-hazardous waste laydown area. During this period, the site continues to be shutdown/idled with limited emissions producing activity. The Sarnia Site was conducting winterization/de-inventorying activities of the EB unit and railcar loading as required by the Suspension Plan which was approved by the MECP on August 14, 2024. This activity began at approximately 06:00 the morning of Wednesday August 28, 2024. Winterization material transfers and rail loading are performed using emission controls and based on calculations and modelling are not expected to have offsite impacts. Additionally, air quality monitoring around the railcar loading was conducted throughout the loading and there were no elevated readings captured during this period.

At 09:00 a notification from eGC#3 alerted the site due to an elevated hourly benzene concentration of 39.39ppb. Activities on-site were halted to investigate. Personnel with handheld monitors were immediately deployed to assist with locating a possible source of the alert. The eGC Dashboard displayed that the cause of the elevated concentration was a one, 10-minute spike at 08:15 over the period of an hour.

The investigation concluded that beginning at 08:00, a fork truck was being utilized in the non-hazardous waste laydown area to move wood and metal material in the vicinity of eGC#3 for approximately 15 minutes. The fork truck operator stated that the equipment was misfiring and had visible exhaust, and the fork truck had to be shut off and turned back on multiple times. The fork truck primary fuel source is propane so it is not expected that benzene emissions

would be a concern with normal fuel combustion; however, the fork truck uses motor oil in the firing cylinders which if burned could result in benzene emissions. Misfiring of the fork truck would be indicative of a fuel combustion issue. When the eGC#3 spike occurred, the wind direction was a WNW wind causing emissions from the fork truck exhaust to be blown directly towards eGC#3. The site's immediate investigation concluded that the forklift exhaust was the cause of the elevated benzene as there were no other activities occurring onsite with elevated benzene emissions that also aligned with wind direction. The immediate corrective action was to cease using the fork truck in the area and proceed with further investigation.

On August 29, 2024 at 8:00am, after it was suspected that the fork truck could be the potential source of the elevated benzene emissions, emissions monitoring from the fork truck exhaust from a cold start was conducted. Exhaust readings of the fork truck captured benzene concentrations of 0.876 ppm (876 ppb). Later in the day the benzene concentration in the exhaust dropped below 20 ppb on the fork truck after it had been driven across the plant for a while.

The final investigation determined that the fork truck exhaust was the source/cause of the elevated benzene readings not the site process equipment. As such, the corrective actions are intended to implement education/training and maintenance best practice improvements on mobile source equipment not chemical processes equipment. INEOS Styrolution understands the sensitivity regarding benzene emissions, the potential impacts offsites and remains committed to reducing benzene emissions from our processes; however, the investigation outcomes further reinforce that INEOS chemical process equipment is not the only source of benzene affecting the Sarnia Valley. Please refer to Appendix A for investigation supporting evidence.

It is within INEOS' best practice to avoid running vehicles/mobile sources around the eGCs; however, given the location of eGC#3 and its proximity to the non-hazardous waste lay down area it is inevitable that vehicle emissions emitting equipment will be in its vicinity. The following measures will be implemented to reduce eGC exceedances from vehicle/mobile source equipment on-site:

Corrective Action:	Implementation Date:
Complete investigation	September 11, 2024
Install barricade around eGC#3 to prevent machinery from getting too close and install a 'NO IDLING' sign in the non-hazardous waste laydown area	Installed on October 3, 2024.
Conduct training for contractors and onsite personnel regarding the eGCs and the implications of operating motor vehicles/equipment within the vicinity of the eGC.	Training was completed for site personnel on October 8, 2024.
Review mobile source/vehicle maintenance practices for site and contractor equipment to identify improvements or adjustment to frequency	A review was completed on October 22, 2024, determining that maintenance (PM and repairs) were sufficient for the forklifts on site.

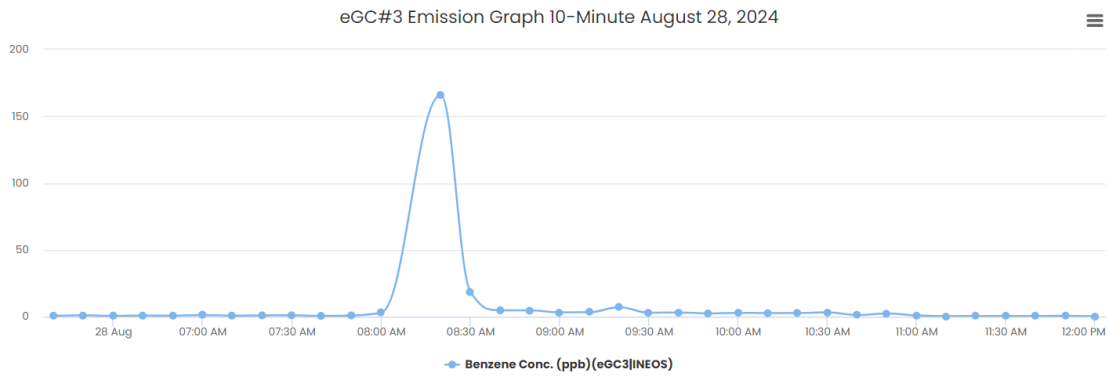
## Appendix A



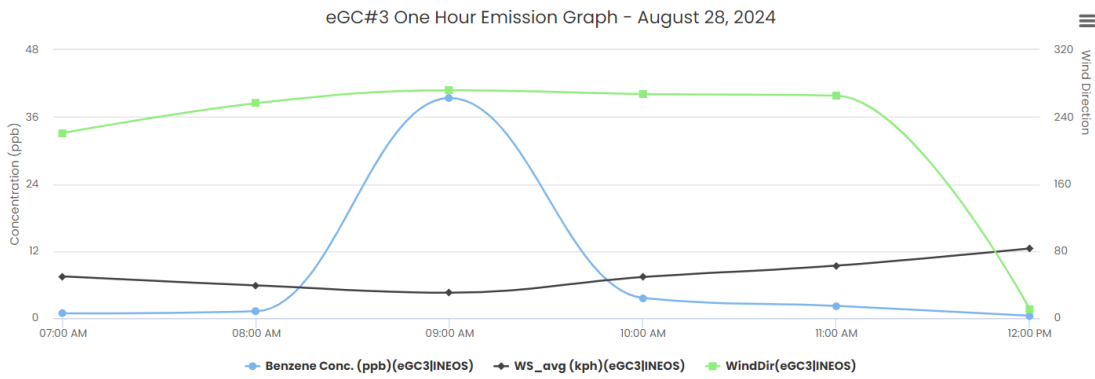
**Figure 1:** Map of eGC#3 and the area the fork truck was operating in.



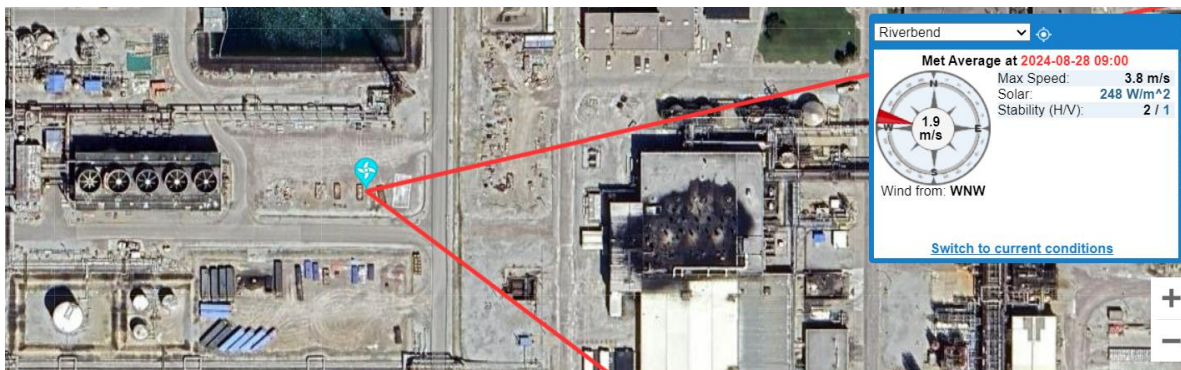
**Figure 2:** Area fork truck was operating in relation to the whole INEOS Styrolution Sarnia Site.



**Figure 3:** A ten-minute benzene emission graph for eGC#3 capturing the elevated reading which skewed the hourly-average.



**Figure 4:** A 1-Hour benzene emission graph for eGC#3.



**Figure 5:** The wind direction at the time of the alert.