

**O.Reg. 206/24 – Air Pollution – Discharge of Benzene from INEOS Styrolution
2-week Benzene Exceedance (September 10, 2024 – September 24, 2024)**

Ontario Regulation 206/24: Air Pollution – Discharge of Benzene from INEOS Styrolution (“O.Reg. 206/24”) requires a report to be submitted to the District Manager of the Ministry’s Sarnia District Office, the Chief of the Aamjiwnaang First Nation, and the Ministry’s Spills Action Centre within 14 days after an exceedance notification. This report describes the discharge above 14 µg/m³ over a two-week period that occurred between September 10, 2024 – September 24, 2024, at Property Line Monitoring Stations #9 and #11.

This report contains the information requested in the order and regulation to the best of our abilities, with the understanding that property line monitoring (“PLM”) contributors cannot be considered with 100% certainty, as there can be many factors affecting the PLM values over any 14-day period. However, we have made every effort reasonable to attempt to identify potential processes, events and/or sources from onsite activities during this time period that may have contributed to the exceeded limit. The attached table summarizes these findings.

Summary of Exceedance:

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| Time Period: | September 10, 2024 – September 24, 2024 |
| Station # and Measured Benzene Concentration: | Station 9: 20.7 µg/m ³ Station 11: 16.0 µg/m ³ |
| Operating Condition: | Shutdown/idle state |
| Wind Direction: | |
| Wind Speed (km/h): | |

Analysis of the Contravention:

Property Line Monitoring (“PLM”) Station #9 and Station #11 are both located at the Styrene 1 site, which is offsite and primarily used for storage. Station #9 is located northeast and Station #11 is located west of Tank 8 (benzene storage tank); as a consequence of their close proximity to Tank 8, it was concluded that the exceedances were likely due to normal breathing emissions from the tank. Between September 10th – 12th, 2024, INEOS Styrolution transferred benzene via pipeline from Tank 8 to an offsite third-party supplier (i.e. Part A of the approved benzene removal plan for Tank 8).

For clarity, INEOS Styrolution has been actively working in collaboration with the Ministry of Environment, Conservation and Parks (“MECP”), Aamjiwnaang First Nation (“AFN”), Environment and Climate Change Canada (“ECCC”), and the City of Sarnia over the last few months to develop a benzene removal plan for Tank 8 that minimizes emissions, provides open communication, includes proactive air monitoring and prioritizes the removal of benzene in a safe and responsible manner. On August 14, 2024, INEOS Styrolution received approvals of the site’s Suspension Plan (including Part A - removal of benzene from Tank 8 above the internal floating roof height). This written approval from MECP allowed INEOS Styrolution to begin pipeline transfers to remove bulk volume of material from the storage tank.

The design specifications to safely store material and maintain the integrity of Tank 8 requires vents to be opened to atmosphere for sufficient pressure/vacuum relief and to minimize organic vapor accumulation in the tank vapor space below flammable concentrations. A Thermal Oxidizer with a 99.9% destruction efficiency was installed on Tank 8 in 2021 and has reduced emission levels below the previous hourly benchmark of 580 µg/m³ and below 30 µg/m³ over a two-week for majority of the time. However, due to the open vents and normal rim and deck seal losses from storage tanks (including withdrawal losses as a result of Part A of the benzene removal plan) there are atmospheric benzene emissions from Tank 8 that are not captured by the Thermal Oxidizer. Wind and ambient temperature conditions can also influence the loss of emissions from the storage tank.

An additional potential contributor to these 2-week benzene exceedances could be related to an LDAR component leak on the Tank 8 benzene pump skid. As required by Item 1.2(e) of amended ECA No. 8903-AD5HPV, a repair on an LDAR Delay of Repair (DOR) pump seal (LDAR tag# 72882 SL - the EB/Benzene transfer pump (PP-357B)) was successfully completed on August 28, 2024. The PP-357B pump was successfully re-tested on September 10, 2024 and placed back in service to perform a pipeline benzene transfer as per the approved Benzene Removal Plan; at which point another valve near the pump began to leak a small amount of benzene into the containment area below the pump. Repair to the valve and cleanup activities were conducted as soon as possible and handheld air monitoring readings confirmed that repair and cleanup activities were successfully completed on September 11, 2024.

It should also be noted that modelling was completed prior to the LDAR repair and verified internally that elevated emissions were not anticipated from this activity combined with normal breathing from Tank 8. However, the modelling did not account for the additional valve leak on the pump skid. This investigation concluded that the combination of these two sources were likely the contributors of the 2-week exceedances at Station #11 and #9. The implementation of Part B of the benzene removal plan for Tank 8 took place on October 2nd and was completed on October 6th, 2024. The tank was officially confirmed to be “out of service” as determined by the requirements set in the ECCC’s Interim Order on October 9, 2024. In addition, as noted above, the LDAR DOR pump seal has been replaced per ECA requirement and the leaking valve has been repaired.

The following measures have been implemented to reduce emissions from Styrene 1:

| Corrective Action: | Implementation Date: |
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| Re-evaluate the pressure protection calculation of Tank 8 and evaluate whether the mushroom vent on the tank can be closed. | Mushroom vent was closed on August 28, 2024. |
| Replaced LDAR Leaker on PP-357B pump seal to reduce emissions at Styrene 1. | Pump seal was replaced on August 28, 2024 and retested again on September 10, 2024. |
| Remove benzene from Tank 8 to eliminate this source of benzene at the Styrene 1 site. | Benzene removal activities were completed on October 6, 2024. Measurements of LEL% were taken inside the tank on October 9, 2024 (above and below the internal floating roof) to verify that the tank is “not in service” as per the ECCC Interim Order. |