



2025 Annual Environmental Report (November 4, 1991 Control Order Part IV, Item [4C])

Elmira, Ontario

LANXESS Canada Co./Cie.

29 May 2026

Executive Summary

LANXESS Canada Co./Cie (LANXESS),¹ has been submitting an Annual Environmental Report (AER) to the Ontario Ministry of the Environment, Conservation and Parks (MECP) since 1991. Information included in the report outlines the changes and improvements that have occurred at the LANXESS' plant in Elmira, Ontario (Site or Facility) and how those changes have impacted the natural environment.

The following are some of the highlights from the 2025 AER.

Air Emissions

- Since 1991, total air emissions from the Facility have decreased by 88.4 percent and air emissions per unit of production have decreased by 96.5 percent.
- From 2024 to 2025, LANXESS' estimated maximum annual process emissions increased by approximately 0.3 percent, total gross production decreased by approximately 6.2 percent, and total emissions per unit of production increased by approximately 6.8 percent.
- Toluene and isobutylene emissions increased by 19 percent and 13 percent, respectively, compared to 2024 due to increased production of products with toluene and isobutylene emissions.
- Nonene and diisobutylene emissions decreased by 21 percent and 3 percent, respectively, compared to 2024 due to process improvement and decreased production of products with nonene and diisobutylene.
- The annual emissions of criteria air contaminants excluding carbon dioxide, total volatile organic compounds (VOCs), PM₁₀, and PM_{2.5}, increased by 3.0 percent compared to 2024 primarily due to the increased natural gas usage and carbon kiln run time.
- All compounds remained well below the Ontario Regulation 419 Point of Impingement (POI) air quality standards. In 2025, there were seven compounds that had modelled maximum Ontario Regulation 419 Benchmark 1 POI concentrations greater than 10 percent of their respective target criteria. These included: chloroform, diphenylamine, ethylene, hydrogen sulphide, metal catalyst, nitrogen oxides, and sulphur dioxide.
- There were changes to the chloroform, diphenylamine, ethylene, hydrogen sulphide, metal catalyst, nitrogen oxides and sulphur dioxide POI concentrations from 2024 to 2025. The emission rates for these contaminants are unchanged. The difference in POI concentrations may be due to an update in the air dispersion model from AERMOD version 22112 to 24142 and building tier height adjustments.
- During 2025, LANXESS did not receive any external odour complaints.
- The odour modelling results indicate that there are no modelled exceedances of odour thresholds above the MECP guidance.

Environmental, Health, and Safety

- In 2025, LANXESS maintained the registration of its Environmental Management System under ISO 14001:2015 and additionally maintained certification of their Environmental, Health, Safety and Security Management System to the American Chemistry Council (ACC) RC14001:2015 standard. LANXESS also maintained verification with the Chemistry Industry Association of Canada (CIAC) Responsible Care Requirements.

Noise

- During 2025, LANXESS did not receive any plant-related external noise complaints.
- The MECP issued Amended ECA Number 7706-D298QB on September 23, 2024, which details the Facility's obligations to document compliance with NPC-300 noise limits after the completion of the Noise Abatement

¹ Uniroyal Chemical Co. became Crompton Co./Cie in January 2001. Crompton Co./Cie became Chemtura Canada Co./Cie in July 2006. Chemtura Canada Co./Cie became LANXESS Canada Co./Cie in May 2017. For consistency, Uniroyal, Crompton, Chemtura, and LANXESS will be referred to as LANXESS throughout this report.

Action Plan (NAAP). LANXESS has completed the previous noise abatement associated with the NAAP detailed in Section 5.2.5 of GHD's May 2024 Acoustic Assessment Report (AAR); and based on 2025 updates and equipment modifications, additional noise abatement items have been identified in GHD's March 2026 AAR.

- LANXESS is committed to completing a baseline noise evaluation during a summer shutdown to review if minimum MECP noise limits can be elevated, based on existing ambient conditions, to ensure that the necessary noise abatement measures are identified and considered for installation.
- LANXESS is concurrently working through these NAAP items and is on track to be in compliance with NPC-300 limits after implementation, which is scheduled for completion before October 2030. LANXESS has communicated this revised NAAP timing with the local MECP District Office.
- After this phase of noise abatement is completed, LANXESS will reassess the Facility's noise levels and update the AAR. The ECA also documents an Acoustic Audit which is required to be completed no later than 8 months after the completion of the NAAP installation.

Soil and Sediment

- In accordance with the recommendation submitted within the 2013 AER, all remediation-related activities for 2025 were reported within the 2025 Annual Monitoring Report (AMR) which was submitted to the MECP on March 31, 2026.

Wastewater Treatment

- n-Nitrosodimethylamine (NDMA) was not detected at a concentration greater than the 0.2 micrograms per litre (µg/L) NDMA discharge limit in 2025.
- An external contractor/inspector inspected 41 of LANXESS' wastewater sumps that were in service in 2025. All sumps were rated as either Good or Fair condition.

Recommendations

- GHD recommends LANXESS remove all waste drum within 90 days and add an additional label requirement to waste drums indicating the completed fill date. This will facilitate the identification of drums that are nearing their 90-day storage limit to ensure that all waste materials continue to be stored in accordance with MECP requirements.

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1. Introduction

This report presents the changes that have occurred at the LANXESS Canada Co./Cie (LANXESS)² plant in Elmira, Ontario (Site or Facility) between January 1, 2025 and December 31, 2025. This 2025 Annual Environmental Report (AER) also presents the effects of those changes on the emissions, effluents, and wastes disposed of or discharged to the natural environment. It is intended that this report be read with the AER's for the years 1992 through 2024, and the 1991 Environmental Audit, as reference sources to provide background information that is not reiterated herein. GHD has prepared this report on behalf of LANXESS.

1.1 Background

On November 4, 1991, the Ontario Ministry of the Environment, Conservation and Parks (MECP) issued an amended Control Order (Control Order) to LANXESS, which in part required the preparation and submission of a comprehensive Environmental Audit Report for the Site.

The Control Order requires LANXESS to submit an annual report detailing changes at the plant and their effects on the emissions, effluents, and wastes disposed of or discharged to the natural environment.

LANXESS has complied with Part IV, Item 4 of the Control Order by preparing and submitting the Phase I Audit Report (Audit) (CRA, August 1991), and AER's for the years 1992 through 2024. Beginning in 2008, discussions regarding surface water and groundwater quality are detailed exclusively in LANXESS' Annual Monitoring Report (AMR). Beginning with the 2014 AMR, all remedial activities, including soil and sediment changes, are also detailed in the AMR. LANXESS submitted the most recent AMR to the MECP in March 2026. This AER details all other changes at LANXESS that occurred during the 2025 calendar year.

1.2 Scope/Objectives

LANXESS and GHD collected information concerning the changes that have occurred to LANXESS' manufacturing processes, Site operations, and plant facilities during 2025. The following documents were updated and reviewed to determine changes at the plant:

- Most recent Vent Plan, revised to include changes to potential air emission sources
- Environmental Compliance Approvals (ECAs)
- Building Assessment Packages (BAPs)³, updated to include changes to potential sources of emissions
- Production volume records
- Solid and liquid waste records
- Air emission rates per product batch and annual emissions estimates
- Correspondence, documents, and reports as referenced in this report

GHD independently verified the information collected by completing a Site visit and an inspection of changes to LANXESS' processes and facilities. GHD also completed a review of records to further confirm the changes at LANXESS.

² Uniroyal Chemical Co. became Crompton Co./Cie in January 2001. Crompton Co./Cie became Chemtura Canada Co./Cie in July 2006. Chemtura Canada Co./Cie became LANXESS Canada Co./Cie in May 2017. For consistency, Uniroyal, Crompton, Chemtura, and LANXESS will be referred to as LANXESS throughout this report.

³ BAPs are tools used in the 1991 Audit to determine the processes and potential emissions to the natural environment that were and are associated with each building on Site. The BAPs are updated annually to reflect changes that have occurred.

This report is organized in the following manner:

- Section 2.0 Describes changes to Site operations
- Section 3.0 Describes changes to air emissions, including odour and noise
- Section 4.0 Describes changes to soil and sediments
- Section 5.0 Describes changes to wastewater treatment
- Section 6.0 Describes changes to solid and liquid waste handling
- Section 7.0 Describes changes to other potential sources of discharge to the environment

2. Changes to Site Operations

This section of the report provides a summary of changes to Site operations in 2025.

2.1 Production Volumes

LANXESS provided GHD with its 2025 production volumes. In 2025, the total gross production volumes (including the production of intermediates, which were further processed to manufacture a final product) decreased by approximately 6.2 percent over the total gross production volume in 2024.

2.2 New Products

During 2025, LANXESS completed a trial production run for a new product, APAN S. There were no new raw materials introduced to the Site and no new wastes were produced as part of the new APAN S production. Emissions modelling was conducted prior to the trial and LANXESS remained within all the limits specified in the ECA with Operational Flexibility.

2.3 Changes to Buildings

Modifications to on-Site buildings completed in 2025 included the following:

- Continued updates to move individual production building control rooms to a central control room in Building 6
- Replaced underground water pipeline to Building 15
- Upgraded the fire water system in Building 20, including a new pump
- Replaced Building 20 washroom steam heater with an electric heater
- Replaced the liquid nitrogen system and relocated the system to east of Building 20
- Modified piping as required in Building 28 as part of the APAN S trial (storage tank in the Main Tank Farm was also modified for use as part of the APAN S trial)
- Replaced WFE 1 product receiver transfer pumps in Building 33
- Installed an emergency vent on PAO Distillate storage tank in Building 33 Tank Farm
- Installed a new cooling tower (including cooling tower basin, fan, and pumps), outside of Building 33
- Removed old cooling tower equipment (including surge tank, two transfer pumps and filter) from the 3rd floor of Building 33
- Replaced Building 44 baghouse
- Upgraded Building 54 pressure swing adsorption (PSA) unit (by Air Products), including a new air compressor
- Installed an emergency vent on the 445 Tar Storage Tank in the Main Tank Farm

2.4 Environmental, Health, and Safety

In 2025, LANXESS maintained the registration of its Environmental Management System (EMS) under ISO 14001:2015 and additionally maintained certification of their Environmental, Health, Safety and Security Management System to the American Chemistry Council (ACC) RC14001:2015 standard. LANXESS also maintained verification with the Chemistry Industry Association of Canada (CIAC) Responsible Care Requirements.

3. Changes to Air Emissions

3.1 Toluene Emissions

Toluene emissions increased by 19 percent compared to 2024 due to an increase in production of the products that use toluene.

As discussed in Section 3.3 below, toluene emissions were modelled to be present at concentrations less than the Ontario Regulation 419 (O. Reg. 419) Schedule 3 point of impingement (POI) air quality criteria. As well, the Tier II odour modelling results for toluene showed the maximum odour concentration at discrete off-Site receptors was well below the toluene odour detection threshold.

3.2 Updated Vent Plan

During 2025, LANXESS modified various process vents at the Site. LANXESS added two new vents and changed the service/description of one other vent. The 2025 vent changes are summarized in Table 3.1.

Vent additions or other modifications that had the potential to affect air emissions from the Site were included as part of the flexibility provisions within the Facility's ECAs (Air).

3.3 2025 Emission Estimates

The following is a summary of the emission estimates for the Facility.

The annual process air emissions (excluding Criteria Air Contaminants [CACs]⁴), as summarized in Table 3.2, are based on actual production volumes, and reflect a range of conservative assumptions (i.e., assumptions that would tend to over-estimate emissions).

Figure 3.1 presents the estimated maximum process air emissions from the Facility, including all the substances that are listed in Tables 3.2 and 3.3, excluding carbon dioxide, total volatile organic compounds (VOCs), PM₁₀, and PM_{2.5}. The exclusion of total VOCs, PM₁₀, and PM_{2.5} was necessary to prevent double counting since VOCs are already included as speciated VOCs in Table 3.2 and PM₁₀, and PM_{2.5} are already included as total PM in Table 3.3.

Carbon dioxide is a greenhouse gas combustion product from LANXESS' use of natural gas that LANXESS reports as part of the Chemical Industry Association of Canada (CIAC; formerly CCPA) National Emissions Reduction Masterplan (NERM) reporting program. Carbon dioxide is reported in Table 3.3 and has not been included on Figure 3.1 because the magnitude of the emissions would make the other emissions from the Facility unreadable.

Total emissions from the Facility, excluding carbon dioxide, have decreased by approximately 88.4 percent since 1991.

⁴ Criteria air contaminants are a group of contaminants linked to the formation of smog and acid rain and include carbon dioxide, carbon monoxide, methane, nitrous oxide, oxides of nitrogen as NO₂, total particulate matter (PM), particulate matter with a diameter less than 10 microns (PM 10), particulate matter with a diameter less than 2.5 microns (PM 2.5), sulphur dioxide (SO₂), and volatile organic compounds (VOCs).

LANXESS' 2025 estimated maximum process air emissions⁵ (Figure 3.1) increased by approximately 0.3 percent, when compared with the 2024 estimated maximum air emissions. During the corresponding period, gross production volumes declined by approximately 6.2 percent. It should be noted that emission amounts differ by product and changes in total production may not be proportional to changes in total emissions.

Figure 3.2 presents the total annual process air emissions in kilograms (kg) divided by the units of production, on a normalized basis (i.e., 1991 was used as the base year and assigned a value of 100 percent). This figure illustrates an increase of 6.8 percent in total emissions per unit of production, from 2024 to 2025. The emissions per unit of production have decreased over time from a baseline of 100 percent in 1991 to 3.47 percent in 2025. This represents a 96.5 percent reduction in emissions per unit of production since 1991.

Table 3.2 presents emission changes from 2024 to 2025 for compounds that were emitted in quantities greater than 10 kg per year for either 2024 or 2025. These changes were due to changes in production rates of products emitting these compounds.

Compounds listed in Table 3.2 that had estimated emissions in 2025 that varied by more than 100 kg from the estimated emissions in 2024 are listed below.

- Nonene emissions decreased by 21% compared to 2024 due to a decrease in production of products with nonene emissions, and Facility improvements to equipment and processes.
- Diisobutylene emissions decreased by 3% compared to 2024 due to a decrease in production of products with diisobutylene emissions.
- Emissions of isopropyl alcohol and toluene increased due to an increase in production of products which emits these compounds.

Table 3.3 lists the CAC emissions reported under the National Pollutant Release Inventory (NPRI) and NERM.

GHD modelled the air emissions from the Facility using the AERMOD dispersion model. AERMOD has been designated as the approved model in O. Reg. 419 for facilities in the industry classification group to which LANXESS belongs. The MECP current approved AERMOD dispersion model version 24142 was used for the 2025 dispersion modelling.

GHD completed the dispersion modelling in accordance with the MECP publication "Air Dispersion Modelling Guideline for Ontario" PIBS 5165e03 (ADMGO). Appendix A provides a description of how the dispersion modelling was completed at the Facility to calculate the maximum concentration at a POI. A general description of the input data used in the dispersion model is also provided in Appendix A.

Table 3.4 presents the data for the compounds that have maximum POI concentrations greater than 10 percent of their Ontario Regulation 419 POI Schedule 3 Standards and Guidelines, updated November 2023 (ACB list). This table presents data for air contaminants greater than 10 percent of Benchmark 1 criteria. Contaminants with Benchmark 2 screening levels and MECP approved POI are included in the Facility's Emission Summary and Dispersion Modelling (ESDM) report. These results represent the worst-case POI concentration of a contaminant that could result under worst-case meteorological conditions and are modelled based on the greatest possible emission rate that could occur over the appropriate averaging time if all emission sources at LANXESS of a particular air contaminant were emitting at the same time (an assumption that would tend to over-estimate emissions). These assumptions would, therefore, not reflect expected actual operating conditions, but rather a maximum possible emission scenario.

There are seven compounds that had modelled maximum POI concentrations greater than 10 percent of their respective target criteria in 2025. These included: chloroform, diphenylamine, ethylene, hydrogen sulphide, metal catalyst, nitrogen oxides, and sulphur dioxide. All compounds at the Facility were modelled to be below their respective Regulation 419 POI air quality standards. The emission rates for these contaminants did not change from the 2024 year. Changes from the 2024 POI concentrations may be due to the change in approved AERMOD version from v. 22112 to v. 24142 and updates to the building tier heights in the AERMOD model.

⁵ Process emissions include all VOCs and Criteria Air Contaminants (excluding CO₂, total VOC, PM_{2.5}, and PM₁₀).

3.4 Environmental Compliance Approvals (Air)

LANXESS was issued site-wide Environmental Compliance Approval (ECA) (Air) No. 7706-D298QB on September 23, 2024, with limited operational flexibility. The flexibility conditions will expire on September 23, 2034. The ECA contains a condition requiring an annual Written Summary Report to document any changes made to the air and noise emissions sources in the 2025 reporting year by June 30, 2026.

The previous ECA approval No. 1439-935T2C, which was revoked, contained a condition requiring an Annual Summary of Activities Report to document any changes made to the air and noise emissions sources in the 2023 reporting year by June 15, 2024. LANXESS submitted the required documentation by June 15, 2024, as required.

3.5 Noise and Odours

LANXESS' public response system receives complaints from the public and the MECP related to odours, noise, and any other general concerns. During 2025, LANXESS did not receive any external odour complaints or plant-related noise complaints.

3.5.1 Noise Abatement Activities

The MECP issued LANXESS Amended ECA No. 7706-D298QB on September 23, 2024 which includes a Noise Abatement Action Plan (NAAP) for the Facility.

Noise Abatement Action Plan (NAAP)

Appropriate noise attenuation measures must be implemented to control the steady state noise impacts predicted at the points of reception (PORs) to the appropriate NPC-300 limits. The NAAP, as approved under Amended ECA No. 7706-D298QB issued on September 23, 2024, had been completed prior to October 2025 as detailed in Section 5.2.5 of GHD's May 2024 Acoustic Assessment Report (AAR); and based on 2025 Facility updates and equipment modifications, additional noise abatement items have been identified in GHD's March 2026 AAR.

LANXESS is committed to completing a baseline noise evaluation during a summer shutdown to review if minimum MECP noise limits can be elevated, based on existing ambient conditions, to ensure that the necessary noise abatement measures are identified and considered for installation.

LANXESS is concurrently working with potential vendors to supply and install the noise controls detailed in Section 5.2.5 of GHD's 2026 AAR and is on track to be in compliance with NPC-300 limits after implementation, which is scheduled for completion before October 2030. LANXESS has communicated this revised NAAP timing with the local MECP District Office.

After this phase of noise abatement is completed, LANXESS will reassess the Facility's noise levels and update the AAR. The ECA also documents an Acoustic Audit which is required to be completed no later than 8 months after the completion of the NAAP installation.

3.6 Odour Dispersion Modelling Update

LANXESS uses dispersion modelling as a screening tool to identify process vents, fugitive emissions, and wastewater treatment system units that have the potential to cause odour impacts at residential receptors. Process vents include vents from LANXESS' process equipment in the various manufacturing buildings and vents from storage tanks.

GHD used a modelling grid, consisting of approximately 700 receptors in the residential areas of Elmira, to determine the overall maximum modelled concentration at a residential receptor using the AERMOD dispersion model (see Section 3.3). Any residential areas that are not included in the modelling grid will have predicted maximum concentrations that are less than those residential areas that are in the grid. Figures B.1 and B.2 in Appendix B show the locations of the residential receptor grid points. Most receptors are included in the model at an elevation of 1.5 metres (m) above ground surface. Selected receptors are at 5 m above ground surface, elevations representing second story receptors near the Site.

GHD compared the modelled maximum residential receptor concentrations to odour detection thresholds (DETs) for all significant compounds to identify process vents and wastewater treatment system units that have the potential to result in a detectable odour at a sensitive receptor. The selected odour thresholds for use in the screening dispersion evaluation are presented in Table B.1 in Appendix B. DETs are based on available O. Reg. 419 ten-minute odour standards and a literature review.

For the 2025 AER, GHD followed the modelling procedure used in 2013. A description of the modelling approach is provided in Appendix A.

GHD modelled all compounds using AERMOD and compared the modelled concentrations to their respective MECP standards using the MECP approved O. Reg. 419/05 tiered grid. Section 3.3, above, discusses the modelling results.

GHD identified meteorological outliers for each compound in accordance with the Odour Guidance. For compounds with the potential to create an odour, GHD re-evaluated the compounds using the above-referenced odour grid and removed the identified meteorological outliers. GHD then compared the revised modelled odour concentrations to the DETs.

Table 3.5 provides a summary of the estimated maximum 10-minute residential receptor concentrations calculated using the AERMOD model. The compounds listed in Table 3.5 are potentially odorous compounds that have been identified historically at the Facility. GHD calculated the 10-minute average concentrations by multiplying the 1-hour average model results by a time averaging conversion factor that is dependent on the atmospheric stability class:

$$C_2 = C_1 \times (t_1/t_0)^n$$

Where:

C_2 = the concentration at the averaging period t_0

C_1 = the concentration at the averaging period t_1

n = exponent based on atmospheric stability

The MECP has recommended a value of 0.28 for the exponent n , as representative of average conditions across a range of atmospheric stabilities.

A tiered approach is used for the odour modelling as per MECP guidance. Each tier level provides a more refined assessment. Based on the initial Tier I⁶ 10-minute odour modelling using a full tiered receptor grid, nitrogen oxides were identified to have potential concentrations greater than the DET.

The Tier II 10-minute odour model results showed no change for all significant contaminants at the residential receptors. Nitrogen oxides did not exceed its odour threshold with the Tier II modelling.

Based on the Tier II 10-minute odour modelling using the discrete residential receptors, GHD determined that no compounds would require a Tier III⁷ modelling assessment for potential concentrations greater than their respective DETs. Therefore, a Tier III assessment was not performed for 2025.

Table 3.5 shows that the odour modelling results for Tier II modelling changed in 2025, as compared to 2024, for all compounds. The change in odour modelling results is due to an update in the air dispersion model, from AERMOD version 22112 to 24142.

A detailed summary of the odour modelling results is provided in Table B.2 in Appendix B.

GHD calculates the maximum concentrations represented by the modelling by using the worst-case hour out of 5 years of meteorological data (approximately 43,800 hours) for AERMOD modelling, after the removal of meteorological outliers. The calculated maximum concentrations at each receptor in the modelling grid do not occur at the same time in reality.

⁶ See Appendix A.

⁷ See Appendix A.

The overall maximum 10-minute average concentrations (with all vents emitting) that have been modelled in this report are unlikely to actually occur. Several layers of conservatism have been assumed in modelling the concentrations of potential odour compounds. Specifically, the modelling assumes that:

- The emission estimates for all natural gas combustion equipment assumes that all the equipment operates simultaneously and at their maximum British thermal unit (BTU)/hour rate.
- The worst-case weather conditions occur at exactly the same time that all the production sources of a compound are emitting at their maximum rate.

Where compounds may be emitted from multiple sources, GHD modelled the combined effect of the sources and analyzed each source separately using the 5 years of meteorological data to determine whether the individual vent has the potential to cause odour impacts. During 2025, GHD did not identify any sources that have the potential to create an off-property odour resulting from a concentration greater than the DETs.

3.7 Odour Abatement Conclusions

Historically, LANXESS has completed numerous actions to reduce off Site odour occurrences. The odour modelling, and the fact that there were no odour complaints in 2025, indicate that the potential for odour impacts is very limited.

3.8 Odour Abatement Recommendations

Based on GHD's modelling, there are no significant emissions of odour from the Facility. Therefore, GHD does not recommend abatement measures resulting from the 2025 odour dispersion modelling.

4. Changes to Soil and Sediment

In accordance with the recommendation submitted within the 2013 AER, all remediation-related activities for 2025 have been reported within the 2025 Annual Monitoring Report (AMR) which was submitted to the MECP on March 31, 2026.

5. Changes to Wastewater Treatment

This section of the report provides a summary of the changes to wastewater treatment, which occurred during 2025.

5.1 Wastewater Discharges

LANXESS collects samples from its wastewater batches prior to discharge. LANXESS analyzes the samples for n-nitrosodimethylamine (NDMA). The samples must contain less than 0.2 micrograms per litre ($\mu\text{g/L}$) NDMA to be discharged to the Regional Municipality of Waterloo (RMOW), Elmira Wastewater Treatment Plant (WWTP) under the terms of the February 4, 1992 Environmental Appeal Board (EAB) Order. NDMA was detected four times in 2025 at a concentration range of 0.01 to 0.04 $\mu\text{g/L}$, which is below the EAB Order requirement (of 0.2 $\mu\text{g/L}$). NDMA was not detected (reporting detection limit = 0.04 $\mu\text{g/L}$) in the remaining 31 wastewater batch samples collected in 2025. Therefore, NDMA was not detected at a concentration greater than the EAB Order requirement in any of the 35 wastewater batch samples collected in 2025.

5.2 Sump Inspections/Repairs

An external contractor/inspector inspected LANXESS' wastewater sumps that were in service in 2025. For each sump, the inspector noted the sump condition, including any specific deterioration, and made a note of whether repairs were necessary.

The contractor/inspector inspected 41 sumps in 2025. The conditions of the sumps as noted by the contractor/inspector during the 2025 inspections are summarized in Table 5.1. All wastewater sumps inspected were rated as Good or Fair. LANXESS plans to maintain its routine sump inspection and repair program to ensure that deterioration of the sump walls and floors does not result in the release of contaminants to soil and groundwater.

6. Changes to Solid and Liquid Waste Handling

This section of the report provides a summary of the changes to solid and liquid waste handling at the Site during 2025.

6.1 Changes to Generator Registrations

LANXESS maintains its Ontario waste class registrations as required to manage all wastes generated at the Site. The list of waste classes may change from month to month and year to year.

The following four waste classes were added to the list of wastes for which LANXESS is listed as a generator, as of the end of 2025:

- Inorganic Laboratory Chemicals – corrosive, 148 C (liquid)
- Waste Oils & Lubricants – ignitable, 252 I (liquid)
- Amines – leachate toxic, 268 T (solid)
- Pathological Wastes – pathological, 312 P (liquid)

There were no waste classes removed from LANXESS' generator listing in 2025.

LANXESS monitors and updates waste stream registrations on an on-going basis throughout the year.

6.2 2025 Site Inspections

LANXESS did not have any Site inspections in 2025.

6.3 Recycling

The quantities of non-process materials collected at LANXESS for recycling during 2025 are presented in Table 6.1. The total amount of non-process material collected on Site for recycling decreased slightly in 2025 as compared to 2024. The overall decrease in recycling of non-process materials is largely due to a decrease in compost, electronic waste, and toner cartridges recycling in 2025.

Table 6.2 summarizes the quantities of packaging materials LANXESS sent off Site for reuse or recycling in 2026. Items that are reused onsite were not tracked by LANXESS.

Table 6.3 presents the quantities of construction materials recycled in 2025. The quantities recycled can vary significantly from year to year, depending on maintenance and construction projects undertaken during a given year.

7. Other Potential Sources

This section of the report summarizes the changes to other potential sources of discharges to the natural environment at the Site during 2025.

7.1 Changes to Drum Storage Areas

The North Drum Slab is the staging area for drums and pails which contain raw materials to be used in manufacturing processes, in-process materials, and waste materials awaiting disposal. The number of containers on the North Drum Slab varies continually as raw materials are utilized in manufacturing processes or waste materials are disposed of off Site, in accordance with applicable regulations.

All waste material drums are to be removed from the Site within 90 days in accordance with MECP requirements. LANXESS has a drum labelling program in place, which indicates the nature of the material in the drum and the fill start date. GHD notes that LANXESS has implemented the use of a plastic sleeve/covering for the drum waste labels to prevent the details from being washed away in the rain. GHD recommends that LANXESS add an additional label requirement to the drums indicating the completed fill date and/or date that drum was moved to the North Drum Slab as waste, to facilitate the identification of drums that are nearing their 90-day storage limit to ensure that all waste materials continue to be stored in accordance with MECP requirements.

GHD inspected the North Drum Slab on April 29, 2026 and observed the drums to be neatly arranged and stacked no more than two drums high. It was observed that one drum of waste had a fill date which was slightly greater than 90 days. GHD recommends LANXESS remove all waste drums within 90 days to ensure that all waste materials continue to be stored in accordance with MECP requirements.

7.2 Reportable Spills

LANXESS did not have any reportable spills in 2025.

8. Recommendations

As a result of the review of the changes at the Facility during 2025, GHD has the following recommendations:

- An additional label requirement should be added to waste drums indicating the completed fill date to facilitate the identification of drums that are nearing their 90-day storage limit.
- Remove all waste drums within 90 days to ensure that all waste materials continue to be stored in accordance with MECP requirements.

All of Which is Respectfully Submitted,
GHD

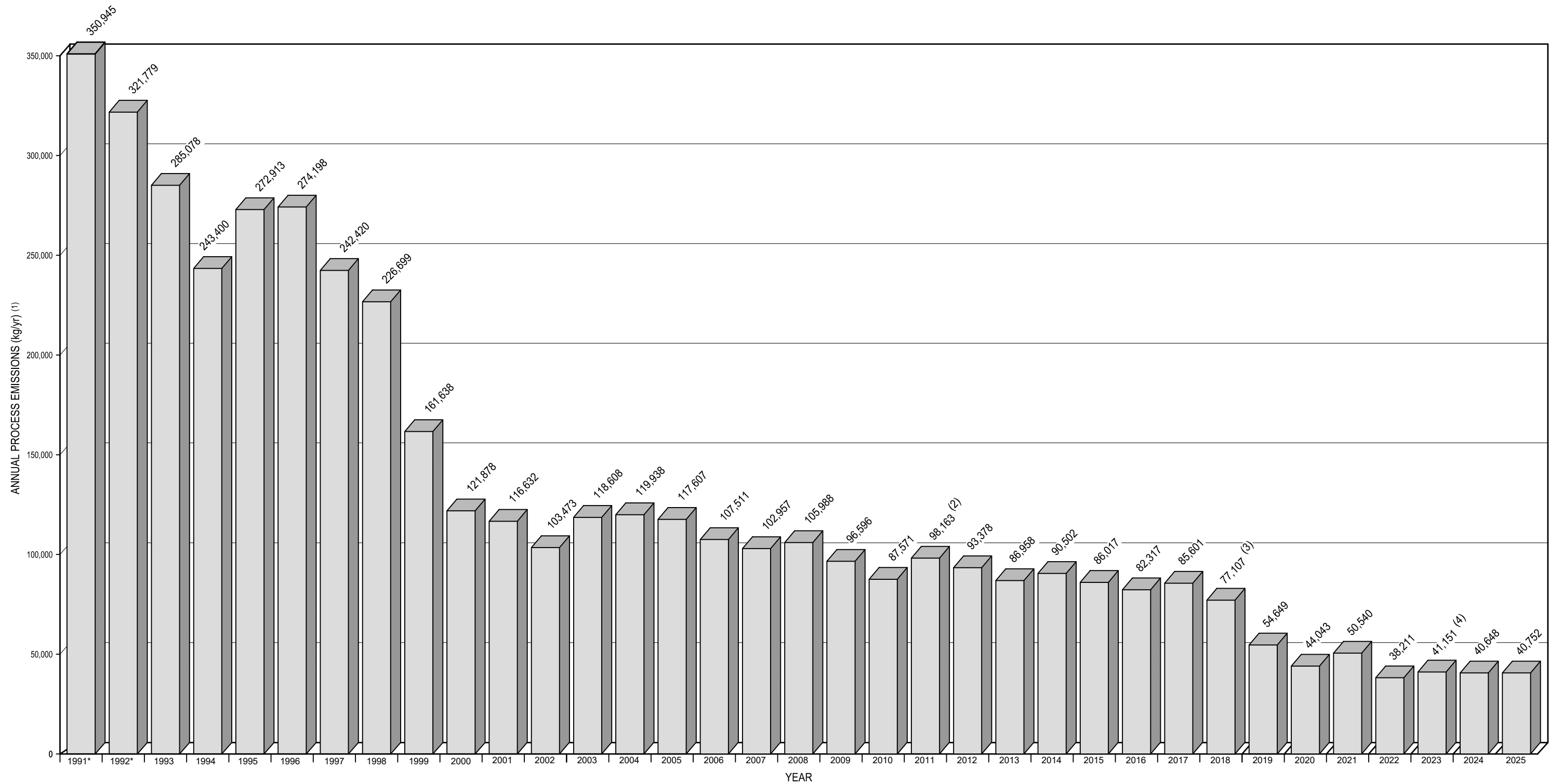


Gordon Reusing, M.Sc., P.Eng.

A handwritten signature in blue ink, appearing to read "Luis Almeida". The signature is fluid and cursive.

Luis Almeida, B.Sc.

Figures



NOTE:
1991* AND 1992* EMISSIONS ARE FOR THE FISCAL YEAR.
1993 TO 2025 EMISSIONS ARE FOR THE CALENDAR YEAR.
(1) PROCESS EMISSIONS INCLUDE TABLE 3.2 PROCESS EMISSIONS AND
TABLE 3.3 CRITERIA AIR CONTAMINANT EXCLUDING CO₂, TOTAL VOC, PM₁₀, AND PM_{2.5}.
(2) UPDATED TO REFLECT AN EMISSION ESTIMATE CHANGE FOR TOLUENE.
(3) UPDATED TO REFLECT EMISSION ESTIMATE CHANGES AS CHANGED IN 2019 REPORT.
(4) UPDATED TO REFLECT EMISSION ESTIMATE CHANGES MADE IN 2023 REPORT.

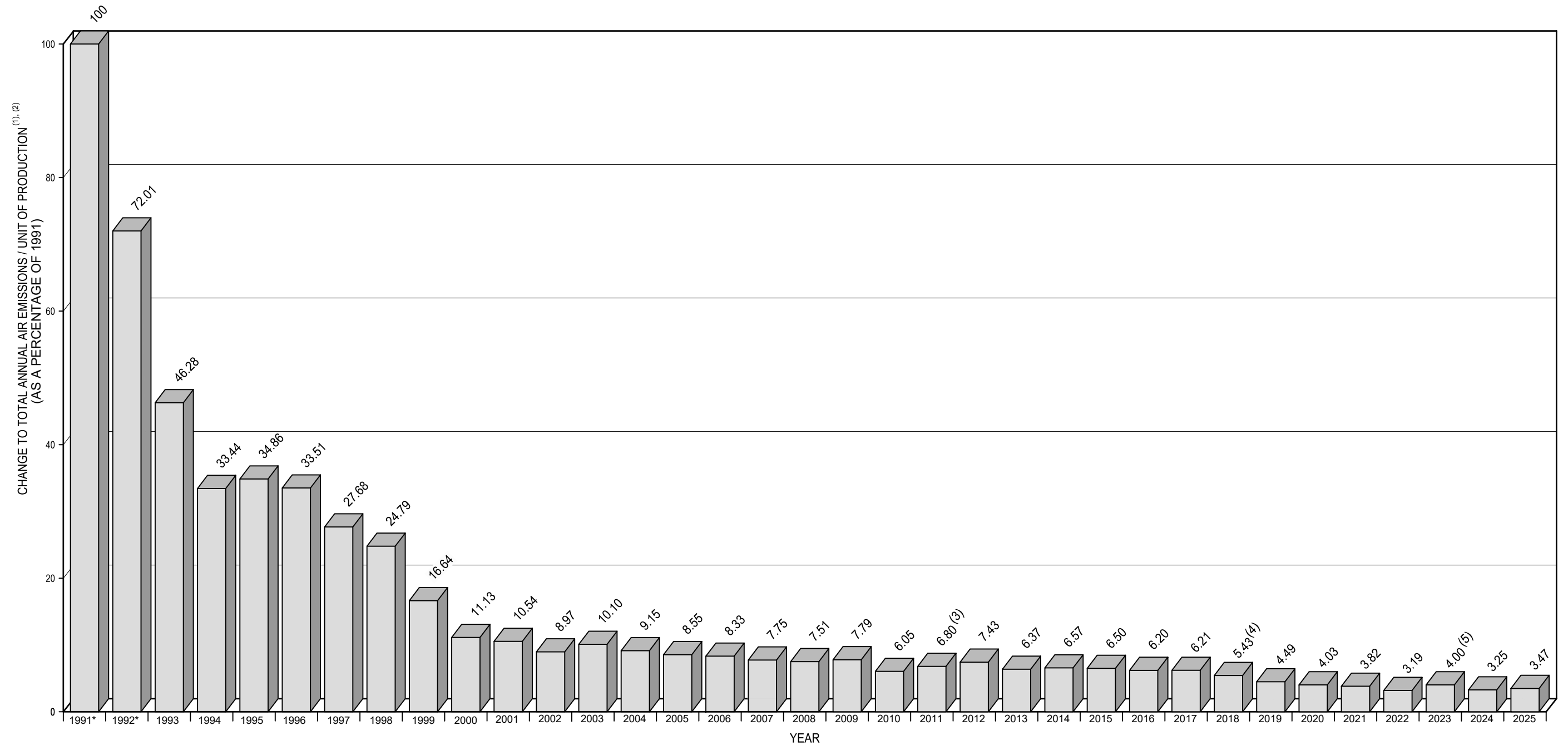


LANXESS CANADA CO./CIE
ELMIRA, ONTARIO

Project No. 3503
Date May 2026

TOTAL ANNUAL AIR EMISSIONS

FIGURE 3.1



NOTE:
 1991* AND 1992* EMISSIONS ARE FOR THE FISCAL YEAR.
 1993 TO 2025 EMISSIONS ARE FOR THE CALENDAR YEAR.
 (1) PROCESS EMISSIONS INCLUDE TABLE 3.2 PROCESS EMISSIONS AND
 TABLE 3.3 CRITERIA AIR CONTAMINANT EXCLUDING CO₂, TOTAL VOC, PM10, AND PM2.5.
 (2) PRODUCTION NORMALIZED USING THE 1991 PRODUCTION RATE.
 (3) UPDATED TO REFLECT AN EMISSION ESTIMATE CHANGE FOR TOLUENE.
 (4) UPDATED TO REFLECT EMISSION ESTIMATE CHANGES MADE IN 2019 REPORT.
 (5) UPDATED TO REFLECT EMISSION ESTIMATE CHANGES MADE IN 2023 REPORT.



LANXESS CANADA CO./CIE
 ELMIRA, ONTARIO

TOTAL ANNUAL AIR EMISSIONS
 PER UNIT OF PRODUCTION

Project No. 3503
 Date May 2026

FIGURE 3.2

Tables

Table 3.1
Vent Changes
2025 Annual Environmental Report
LANXESS Canada Co./Cie
Elmira, Ontario

Building	Vent Number	Reason for Change	Description
Building 28	28 : 41	Change in Service/Description	Misc Vent Tank Pres/Vac/FA Vent
Building 33	33T : 46	Added	PAO Distillate Storage Tank PVSV
Main Tank Farm	MTF : 66	Added	Emergency Vent 445 Tar Storage Tank

Table 3.2

Summary of Estimated Annual Process Air Emissions ^[1]
2025 Annual Environmental Report
LANXESS Canada Co./Cie
Elmira, Ontario

Compound	2024 Annual Emission (kg/year)	2025 Annual Emission (kg/year)	Percent Change 2024 to 2025 (%)
Nonene	6,026	4,762	-21%
Diisobutylene (DIB)	4,527	4,414	-3%
Isopropyl Alcohol	3,599	4,059	13%
Toluene	2,899	3,460	19%
Isobutylene (IB)	1,511	1,448	-4%
Ethylene	884	816	-8%
VOCs (from NG emissions only)	505	540	7%
Hydrogen Bromide	473	444	-6%
Propylene Tetramer	366	380	4%
Acetone	380	380	0%
Ammonia	196	203	4%
Ethane	181	188	4%
n-Pentane	152	157	4%
Ethyl Bromide	148	137	-8%
n-Butane	124	129	4%
Hexane	105	109	4%
Propane	93	97	4%
Bromine	85	85	0%
Decene	85	82	-3%
Hydrogen Chloride	65	71	10%
Methanol	33	65	97%
Isobutylbromide (IBB)	53	49	-8%
Diphenylamine (DPA)	48	43	-12%
2,2'-methylenebis(6-nonyl-p-cresol)	10	0	-100%
GRAND TOTAL	22,548	22,115	-2%

Notes:

kg Kilogram

VOCs Volatile organic compounds

NG Natural gas

^[1] Does not include criteria air contaminants reported in Table 3.3. Only compounds with emissions that exceed 10 kg/year in 2024 or 2025 are presented.

Table 3.3

Summary of Estimated Criteria Air Contaminant Emissions ^[1]
2025 Annual Environmental Report
LANXESS Canada Co./Cie
Elmira, Ontario

Compound	2024 Annual Emission (kg/year)	2025 Annual Emission (kg/year)	Percent Change 2024 to 2025 (%)
Carbon Dioxide ^[2]	6,788,624	7,043,757	4%
Carbon Monoxide	4,090	4,250	4%
Methane ^[2]	134	139	4%
Nitrous Oxide	119	124	4%
Oxides of Nitrogen (expressed as NO ₂)	6,734	7,112	6%
Total Particulate Matter (PM)	3,068	2,665	-13%
PM ₁₀ ^[3]	3,068	2,665	-13%
PM _{2.5} ^[4, 5]	666	691	4%
Sulphur Dioxide	3,954	4,348	10%
VOCs ^[6]	21,021	20,596	-2%

Notes:

kg Kilogram

VOCs Volatile organic compounds

^[1] Criteria Air Contaminants defined by NPRI^[2] Greenhouse gas compound.^[3] Airborne particulate matter with an aerodynamic diameter equal to or less than 10 microns.^[4] Airborne particulate matter with an aerodynamic diameter equal to or less than 2.5 microns.^[5] All PM from building dust collectors and natural gas combustion are assumed to be PM_{2.5}.^[6] Includes all compounds in Table 3.2 except acetone, ammonia, hydrogen chloride, propylene tetramer, hydrogen bromide, and diphenylamine.

These compounds are not organic or are not photochemically reactive.

Table 3.4

Estimated Maximum POI Concentrations From Air Emissions
2025 Annual Environmental Report
LANXESS Canada Co./Cie
Elmira, Ontario

Contaminant	CAS No.	2024 Max. POI Concentration ^[1] (µg/m ³)	2025 Max. POI Concentration ^[1] (µg/m ³)	Percent Change 2024-2025 (%)	Averaging Period (hours)	MECP POI Limit ^[2] (µg/m ³)	Regulation Schedule #	Percentage of MECP POI Limit
Chloroform	67-66-3	0.4	0.4	-2%	24	1	B1-S	43%
Diphenylamine	122-39-4	4.2	4.0	-5%	24	17.5	B1-S	23%
Ethylene	74-85-1	9.5	9.5	-1%	24	40	B1-G	24%
Hydrogen Sulphide	7783-06-4	1.7	1.7	-1%	10 minutes	13	B1-G	13%
		0.5	0.5	-1%	24	7	B1-G	8%
Metal Catalyst	NA	2.1	2.1	0%	24	10	B1-G	21%
Nitrogen Oxides	10102-44-0	180	181	0.3%	1	400	B1-S	45%
		78	78	0.3%	24	200	B1-S	39%
Sulphur Dioxide	7446-09-5	10.1	10.1	-0.03%	1	100	B1-G	10%
		0.7	0.7	0.2%	Annual	10	B1-G	7%

Notes:

^[1] Under hypothetical worst case emission scenarios and atmospheric conditions.

^[2] MECP Point of Impingement (POI) Schedule 3 Standards and Guidelines, updated November 2023 (ACB list).

µg/m³ Microgram per cubic metre

B1-S Benchmark 1 Standard

B1-G Benchmark 1 Guideline

This table presents data for air contaminants greater than 10% of Benchmark 1 criteria. Contaminants with Benchmark 2 screening levels and MECP approved POI are included in the Facility's ESDM report.

Table 3.5

Tier I and Tier II Odour Thresholds With Estimated Maximum Concentrations ^[1]
2025 Annual Environmental Report
LANXESS Canada Co./Cie
Elmira, Ontario

Compound	Lowest Reliable Published Odour Detection Threshold (DET)		Max Odour 10-min Tier I Concentration AERMOD Results May 2024	Max Odour 10-min Tier II Concentration AERMOD Results May 2024	Max Odour 10-min Tier I Concentration AERMOD Results May 2025	Max Odour 10-min Tier II Concentration AERMOD Results May 2025	Tier I Percent Change May 2024 to May 2025	Tier II Percent Change May 2024 to May 2025	Percentage Target DET Tier I May 2025	Percentage Target DET Tier II May 2025
	(ppb)	(µg/m ³)	(µg/m ³)	(µg/m ³)	(µg/m ³)	(µg/m ³)	(%)	(%)	(%)	(%)
Ammonia	38	27	7	4	7	4	-1	-1	25%	14%
Chloroform	133,000	661,564	3.8	2.1	3.8	2.1	-1	-1	0%	0%
Diisobutylene	5,300	24,782	2,637	2,329	2,766	2,505	5	8	11%	10%
Diphenylamine	22	155	48	22	46	21	-5	-5	30%	14%
Ethylene	17,000	19,872	34	36	34	36	-1	-1	0%	0%
Hydrogen Sulphide ^[2]	--	13	2	0	2	0	-1	-5	13%	1%
Nitrogen Oxides	140	268	298	262	298	265	0	1	111%	99%
Toluene	1,618	6,210	1,131	882	1,077	851	-5	-3	17%	14%

Notes:

^[1] Tier I and Tier II are screening criteria specified by the MECP to determine if further evaluation of odour potential is required. See Appendix A for more information.

^[2] This compound exceeded 10% of its benchmark in 2021, and was added to the report in 2022.

DET Odour Detection Threshold.

AERMOD USEPA AERMOD Dispersion Model.

ppb Parts per billion.

µg/m³ Microgram per cubic metre.

Table 5.1

Wastewater Sump Inspection Summary
2025 Annual Environmental Report
LANXESS Canada Co./Cie
Elmira, Ontario

Sump No.	Building No.	Location	2024 Inspection		2025 Inspection		Comments
			Date	Condition	Date	Condition	
1	33	Outside	Constant pressure/vacuum monitoring - daily verification of vacuum completed by LANXESS				Repair required where gutter meets sump.
2	50	Sump at end of gutter	6/17/2024	Fair	6/20/2025	Fair	
3	37	Outside West	6/14/2024	Good	6/30/2025	Good	
4	25	West Annex	6/23/2024	Good	7/4/2025	Good	
5	33	Tank Farm	6/11/2024	Good	6/20/2025	Good	
6	54	Inside Northeast	5/31/2024	Good	7/7/2025	Good	
7	8	Main Sump	7/9/2024	Fair	8/12/2025	Good	
8	20A	Outside East	Sump removed from service				
9	54	Tank Farm	6/20/2024	Good	7/7/2025	Good	
10	28	Outside Northeast	7/23/2024	Good	9/8/2025	Good	
11	45	South	7/18/2024	Good	7/11/2025	Good	
12	36	Inside	6/18/2024	Good	6/20/2025	Good	
13	14	Outside East	Constant pressure/vacuum monitoring - no inspection required				
14	44A	South	7/17/2024	Good	7/14/2025	Good	
15	13	Outside East	7/18/2024	Good	5/30/2025	Good	
16	57	General West	Sump removed from service				
17	15	4 ft. Round	Constant pressure/vacuum monitoring - daily verification of vacuum completed by LANXESS				
18	15	Northwest	6/20/2024	Good	6/24/2025	Good	
19	44	Inside Southeast	7/4/2024	Good	7/11/2025	Good	
20	44B	Inside Northwest	7/4/2024	Good	7/11/2025	Good	
21	44	Outside Southeast	Sump removed from service				
22	40	Balance Tank Sump	7/4/2024	Good	7/11/2025	Good	
23	28	Outside South	Sump removed from service				
24	15B	Inside Sump	6/20/2024	Good	6/11/2025	Fair	
25	19A	Outside North Pump	6/17/2024	Good	6/24/2025	Good	
26	57	North Conc. Basin	Sump removed from service				Small fracture in containment wall.
27	57	South Conc. Basin	Sump removed from service				
28	57	Waste TF East	7/4/2024	Good	6/27/2025	Good	
29	54	Outside West	Sump removed from service				
30	53	West Inside	6/20/2024	Good	7/11/2025	Good	
31	57	Waste TF South	7/4/2024	Good	6/27/2025	Good	
32	53	Center Inside	6/20/2024	Good	7/11/2025	Good	
33	40	Inside West	7/4/2024	Good	7/11/2025	Good	
34	14	Outside East	6/20/2024	Good	6/24/2025	Good	

Table 5.1

Wastewater Sump Inspection Summary
2025 Annual Environmental Report
LANXESS Canada Co./Cie
Elmira, Ontario

Sump No.	Building No.	Location	2024 Inspection		2025 Inspection		Comments	
			Date	Condition	Date	Condition		
35	15	HCL Tank Farm	7/13/2024	Good	Sump removed from service			
36	15	Tank Farm		Sump removed from service				
37	37	Tank Farm	6/18/2024	Good	6/30/2025	Good		
38	47	Outside East	7/19/2024	Good	7/7/2025	Good		
39	57	Inside East	5/31/2024	Good	6/27/2025	Good		
40	57	DAF Solids	6/25/2024	Good	7/29/2025	Good		
41	57	DAF Float	6/25/2024	Good	9/1/2025	Good		
42	57	DAF Treated H ₂ O		Sump removed from service				
43	57	DAF Oil		Sump removed from service				
44	57	pH Adjustment N		Sump removed from service				
45	57	pH Adjustment S		Sump removed from service				
46	57	Pump Room	5/31/2024	Good	6/27/2025	Good		
48	54	Outside North	6/20/2024	Good	6/12/2025	Good		
49	15	NaOH Containment	6/13/2024	Good	6/24/2025	Good		
50	33	Tank Farm South	6/14/2024	Good	6/20/2025	Good		
51	18	Outside South East	6/17/2024	Good	6/20/2025	Good		
52	19A	Outside North	Constant pressure/vacuum monitoring - no inspection required					
53	37	Catch Basin SW	Sump removed from service					
54	44C	Outside South East	7/4/2024	Good	7/7/2025	Good		
55	62	Center	6/27/2024	Good	7/7/2025	Good		
56	44C	Inside South	7/4/2024	Good	7/11/2025	Good		
57	45	South east	7/18/2024	Good	7/10/2025	Good		
58	37	North	Sump removed from service					
59	37	East (SS)	Constant pressure/vacuum monitoring - daily verification of vacuum completed by LANXESS					
60	15	NaOH Unloading Sump	6/18/2024	Fair	6/24/2025	Good		
61	62	South (Building 62A)	6/27/2024	Good	7/7/2025	Good		
62	67	Building 67 Sump	7/4/2024	Good	7/7/2025	Good		

Notes:

- Good - A sump rating of "Good" is applied to sumps that showed no signs of decay or deterioration when inspected.
- Fair - A sump rating of "Fair" is applied to sumps that showed minor signs of decay but containment should be maintained for at least another 12 months.
- Poor - A sump rating of "Poor" is applied to sumps that showed major signs of decay and containment may be lost in the next 12 months. Work to remedy the condition must be completed.

Table 6.1

Quantities of Non-Process Materials Recycled In 2025
2025 Annual Environmental Report
LANXESS Canada Co./Cie
Elmira, Ontario

Product Stream	Quantity Collected in 2024 (yards)	Quantity Collected in 2025 (yards)
Co-Mingled (including HDPE, tins, glass, tetra packs) ^[1]	--	262

Product Stream	Quantity Collected in 2024 (tonnes)	Quantity Collected in 2025 (tonnes)
Shredded Paper	6.54	5.98
Toner Cartridges	0.10	0.05
Fluorescent lamps containing mercury	0.00	0.00
Electronics	0.56	0.37
Batteries	0.00	0.32
Compost	12.79	9.65
Total	20.3	16.7

Note:

^[1] Beginning in 2025, the LANXESS waste/recycling subcontractor provided volume quantities for co-mingled recyclable materials. Due to this information change, a comparison against 2024 quantities, previously reported as a total mass, could not be completed.

Table 6.2

Quantities of Packaging Materials Recycled In 2025
2025 Annual Environmental Report
LANXESS Canada Co./Cie
Elmira, Ontario

Product Stream	Quantity Collected in 2024 (tonnes)	Quantity Collected in 2025 (tonnes)
Recycled		
Scrap Metal	[1]	[1]
Reused		
Used Drums, Pails, Carboys, Totes (Returned to Supplier)	2.2	0.0
Used Super Sacks (Reuse off site)	0.0	0.0
Total	2.2	0.0

Note:

[1] Scrap metal volumes have been combined and reported in Table 6.3.

Table 6.3

Quantities of Construction Materials Recycled In 2025
2025 Annual Environmental Report
LANXESS Canada Co./Cie
Elmira, Ontario

Product Stream	Quantity Collected in 2024 (tonnes)	Quantity Collected in 2025 (tonnes)
Wood	0.0	0.0
Concrete	0.0	0.0
Asphalt	0.0	0.0
Scrap Metals ^[1]	18.7	37.6
TOTAL	18.7	37.6

Note:

^[1] Packaging and construction scrap metal volumes have been combined .

Appendices

Appendix A

Dispersion Modelling Methodology

Appendix A Dispersion Modelling Methodology

LANXESS Canada Co./Cie

Elmira, Ontario

The Ontario Ministry of the Environment, Conservation and Parks (MECP)¹ has identified the AERMOD modelling system as one of the approved dispersion models under O. Reg. 419/05, and includes the Plume Rise Model Enhancements (PRIME) algorithms for assessing the effects of buildings on air dispersion.

GHD completed the air dispersion modelling, and the odour dispersion modelling, per the following MECP guidance documents:

- Air Dispersion Modelling Guideline for Ontario (PIBS 5165e03) (ADMGO)
- Methodology for Modelling Assessments of Contaminants with 10-Minute Average Standards and Guidelines under O. Reg. 419/05 (PIBS 6700e) (Technical Bulletin)

The Technical Bulletin prescribes the following method for the modelling of 10-minute averaging periods for odorous compounds:

- **Tier I:** The air dispersion model is constructed as prescribed by O. Reg. 419/05, using a tiered receptor grid, and modelled for a 1-hour averaging period. All modelled results are then converted to a 10-minute averaging period. The removal of meteorological outliers is allowed to determine the maximum compliance odour concentration. After this is done, if the odour-based concentration standard or guideline value is not exceeded at any modelled point, no further modelling is required. If a modelled concentration is greater than the odour-based standard or guideline, then further modelling is required.
- **Tier II:** The air dispersion model is constructed with discrete receptors located at all locations where sensitive human activities regularly occur. The sources are modelled for a 1-hour averaging period. All modelled results are then converted to a 10-minute averaging period. The removal of previously identified meteorological outliers is allowed to determine the maximum compliance odour concentration. After this is done, if the odour-based concentration standard or guideline value is not exceeded at any sensitive receptor, no further modelling is required. If a modelled concentration is greater than the odour-based standard or guideline, then further modelling is required.
- **Tier III:** The air dispersion model is constructed with a discrete receptor located at the most impacted sensitive receptor identified in the previous step. The sources are modelled for a 1-hour averaging period. All modelled results are then converted to a 10-minute averaging period. A frequency analysis, by year, is then performed. If the frequency of exceedances of the odour-based standard or guideline value is less than 0.5 percent per year, then the odour concentrations may be considered not significant.

The AERMOD modelling system is made up of the AERMOD dispersion model, the AERMET meteorological pre-processor, the AERMAP terrain pre-processor and the BPIP building downwash pre-processor. The following approved dispersion model and pre-processors were used in the assessment:

- AERMOD dispersion model (v. 24142)
- AERMAP surface pre-processor (v. 24142)
- BPIP building downwash pre-processor (v. 04274)

GHD did not use AERMET in this assessment. A pre-processed MECP meteorological dataset was used.

¹ Prior to June 24, 2018, the MECP was called the Ministry of the Environment and Climate Change (MOECC).

GHD modelled the facility sources as point sources and used the Universal Transverse Mercator (UTM) coordinate system, as per Section 5.2.2 of the ADMGO, to specify model object sources, buildings, and receptors. The coordinate system defined all coordinates in the North American Datum of 1927 (NAD27).

GHD utilized a MECP pre-processed 5-year dispersion meteorological data set (i.e., surface and profile files) in the AERMOD model runs. The regional data is representative of southern southwest Ontario and is based on surface data from London, Ontario, and upper air data from White Lake, New York State. The "Suburban" meteorological data was used. The meteorological dataset covers the years 1996 to 2000 inclusive.

AERMOD captures the essential physics of dispersion in complex terrain through the use of a separate height scale factor for each receptor (USEPA, 1998 – AERMAP UG). The height scale factor represents the terrain that dominates flow in the vicinity of the receptor.

The height scale factor that is used by AERMOD is generated by an AERMAP terrain pre-processor. AERMAP utilizes terrain data, or Digital Elevation Model (DEM) data in conjunction with a layout of receptors and sources to height scale factors that is directly used in AERMOD. This assessment uses terrain data obtained from MECP (7.5 minute format). Digital data from the St. Jacobs/Elmira area tile set were used (Ontario Digital Elevation Model Data, Tile 085).

GHD chose receptor locations based on recommendations provided in Section 7.1 of the ADMGO, and in accordance with s.14 of O. Reg. 419/05. GHD defined a tiered receptor grid starting with a rectangular boundary that enclosed all the modelled sources (bounding box). Starting from the edge of the bounding box the tiered grid is defined with a fine resolution, which transitions to coarser resolutions further away. All tiered distances are defined relative to the bounding box. The receptor grid is described as follows:

- 20 metre (m) spacing within 200 m of the edge of the bounding box
- 50 m spacing from 200 to 500 m
- 100 m spacing from 500 to 1,000 m
- 200 m spacing from 1,000 to 2,000 m
- 500 m spacing from 2,000 to 5,000 m

GHD modelled the property line ground level receptor grid with 10 m spacing to evaluate the maximum property boundary concentration. No receptors were placed inside the Site's property line.

For odour modelling, discrete sensitive receptors are located at residential locations near the Site. Most of the receptors are located at an elevation of 1.5 m above ground level. Selected receptors are located at an elevation of 5.0 m above ground level, representing second story receptors near the Site. In total, approximately 700 discrete sensitive receptors were used.

GHD entered the Facility buildings into the model using the USEPA Building Profile Input Program (BPIP-PRIME). The inputs into this pre-processor include the co-ordinates and heights of the buildings and stacks. The BPIP program is executed to evaluate any building cavity downwash effects. Cavity downwash can result in air contaminants being forced to ground level prematurely under certain meteorological conditions. The on-Site buildings and structures are modelled with their respective average roof heights.

The GHD modelling includes the use of the PRIME plume rise algorithms, which include vertical wind shear calculations (important for buoyant releases from short stacks [i.e., stacks at release heights within the recirculation zones of the buildings]). The PRIME algorithm also allows for the wind speed deficit factors to improve the accuracy of predicted concentrations within building wake zones that form in the lee of buildings.

The shortest time scale that AERMOD predicts is a 1-hour average value. Schedule 3 standards of O. Reg. 419/05 are applied to this Site; many of these standards are based on 1-hour and 24-hour averaging times, which are averaging times that are easily provided by AERMOD. In cases where a standard has an averaging period less than 1-hour (e.g., 10-minute), a conversion to the appropriate averaging period is completed using the MECP recommended conversion factors, as documented in the ADMGO.

The options used in the AERMOD dispersion model are summarized in the table below.

Modelling Parameter	Description	Used in the Assessment?
DFAULT	Specifies that regulatory default options will be used	Yes
CONC	Specifies that concentration values will be calculated	Yes
DDPLETE	Specifies that dry deposition will be calculated	No
WDPLETE	Specifies that wet deposition will be calculated	No
FLAT	Specifies that the non-default option of assuming flat terrain will be used	No, the model will use elevated terrain as detailed in the AERMAP output
AVERTIME	Time averaging periods calculated	1-hour, 24-hour
URBANOPT	Allows model to incorporate the effects of increased surface heating from an urban area on pollutant dispersion under stable atmospheric conditions	No
URBANROUGHNESS	Specifies the urban roughness length (m)	Not applicable
FLAGPOLE	Specifies that receptor heights above local ground level are allowed on the receptors	Yes

Appendix B

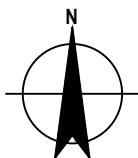
Odour Assessment Update



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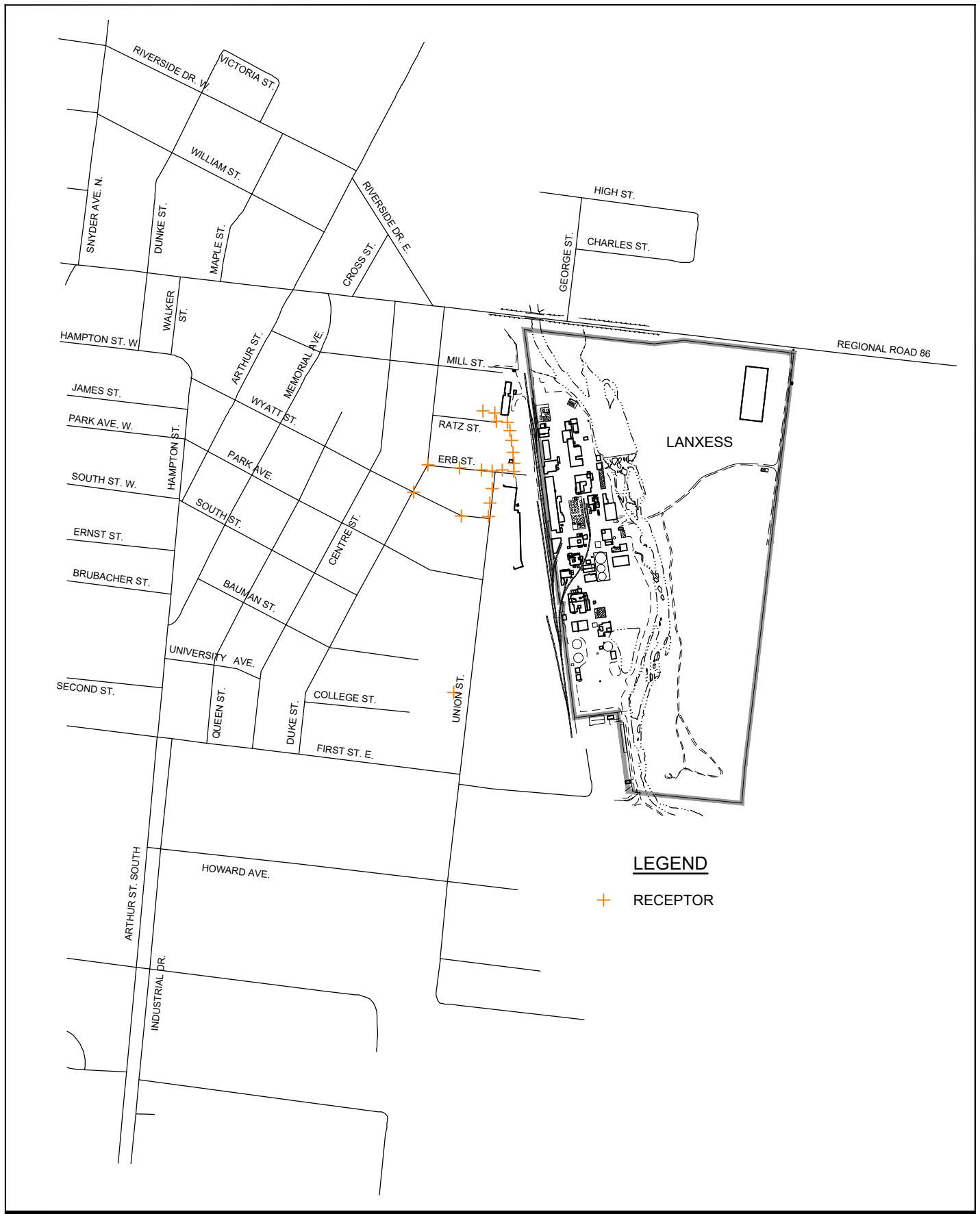


LANXESS CANADA CO./CIE
ELMIRA, ONTARIO

Project No. 3503
Date May 2026

**RESIDENTIAL RECEPTOR GRID AT
1.5 METRE HEIGHT ABOVE GROUND**

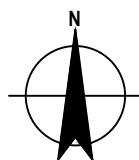
FIGURE B.1



0 100 200 300m

1:10000

Coordinate System:
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LANXESS CANADA CO./CIE
ELMIRA, ONTARIO

Project No. 3503
Date May 2026

RESIDENTIAL DISCRETE RECEPTORS AT
5 METRE HEIGHT ABOVE GROUND

FIGURE B.2

Table B.1

Summary of Published Odour Threshold Values for Compounds with the Potential to Cause Odour Impacts
2025 Annual Environmental Report
LANXESS Canada Co./Cie
Elmira, Ontario

Source		Reference 1						Reference 2						Reference 3	Reference 4			
Compound	CAS NO.	GMAOT (ppm)		RAV (ppm)		RARV (ppm)		DET			REC			(ppm)	Purity	REC (ppm)	DET (ppm)	Not Specified
		DET	REC	DET	REC	DET	REC	Code	(ppm)	Source	Code	(ppm)	Source					
Ammonia	7664-41-7	-	-	-	-	-	-	A	16.7	Nishida '79	E2	1.79	Geier '36	17.0	1	46.80	-	-
		-	-	-	-	-	-	-	-	-	D3	0.57	Anon '80	-	2	47.00	-	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	0.000037	-
Chloroform	67-66-3	192	-	133-276	-	0.6-1413	-	A	133	Punter '80	B	1413	Scherberger '58	133-276	3	-	0.663	-
Diisobutylene (DIB)	96-06-0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diphenylamine (DPA)	122-39-4	-	-	-	-	0.022-0.025 (1)	-	-	-	-	E1	0.022-0.025	Backman '17	0.022-0.03	-	-	-	-
Ethylene	74-85-1	270	420	-	-	17-959	-	A	270	Hellman '74	A	418	Hellman '74	17-959	3	-	260	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	3	4000	-	-
Hydrogen Sulphide	7783-06-4	0.0094	0.0045	0.001-0.13	-	0.00007-1.4	-	A	0.13	Katz '30	A	0.0045	Wilby '69	0.0094	1	0.0047	-	-
		-	-	-	-	-	-	A	0.0057-0.0079	Young '66	-	-	-	-	2	0.00047	-	-
		-	-	-	-	-	-	A	0.0072	Cederlof '66	-	-	-	-	3	-	0.18	-
		-	-	-	-	-	-	A	0.0034-0.0065	Adams	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	A	0.019	Williams '77	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	A	0.053	Nishida '79	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	A	0.0019	Winneke '79	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	A	0.0011	Thiele '79	-	-	-	-	-	-	-	-
NO2	10102-44-0	-	-	-	-	0.058-0.14 (1)	-	C3	0.1-0.4	Henschler '60	-	-	-	0.06-0.14	-	-	-	-
Toluene	108-88-3	1.6	11	0.16-37	1.9-69	0.021-69	-	A	0.021-0.5	Nader '58	A	69	May '66	1.6	1	4.68	-	-
		-	-	-	-	-	-	A	0.27	Stalker '63	A	1.9	Hellman '73-74	-	1	2.14	-	-
		-	-	-	-	-	-	A	37	May '66	-	-	-	-	2	4.70	-	-
		-	-	-	-	-	-	A	0.16	Hellman '73-74	-	-	-	-	3	-	-	0.0053
		-	-	-	-	-	-	A	6.7	Punter '80	-	-	-	-	3	-	0.17	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	3	1.7	-	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	2	2.1	-	-

Notes:

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REFERENCE 2 - Odour Thresholds for Chemicals with Established Occupational Health Standards, Table 5.3
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GMAOT - Geometric Mean Air Odour Threshold (ppm)
RAV - Range of Acceptable Values (ppm)
GMOTV - Geometric Mean Odour Threshold Volume

RARV - Range of all Referenced Values (ppm)
A - Accepted value based on critique
B - Rejected value based on critique
B2 - Rejected value - minimum perceptible value
B5 - Rejected value - insufficient methodology
C3 - Rejected source - passive exposure/workplace
D3 - Omitted source - anonymous reference

E1 - Source located but not reviewed

Purity 1 - chemically pure
Purity 2 - purity
Purity 3 - not specified
* Values are for m-xylene
(1) - not indicated as either a recognition threshold or a detection threshold

Table B.1

Summary of Published Odour Threshold Values for Compounds with the Potential to Cause Odour Impacts
2025 Annual Environmental Report
LANXESS Canada Co./Cie
Elmira, Ontario

Source		Reference 5				Reference 6				Reference 7	Reference 8	Reference 9	Reference 10	Molecular	Selected Odour Thresholds	
Compound	CAS NO.	Odour Low mg/m ³	Irritating Conc. mg/m ³	Odour Low ppm	Irritating Conc. ppm	REC (ppm)	Source	DET (ppm)	Source	ORTECH GMOTV (ppm)	CRA GMOTV (ppm)	MOE-Reg.419 (µg/m ³)	Fenaroli's Handbook ppm	Weight	(ppm)	DET (mg/m ³)
Ammonia	7664-41-7	0.0268	72	0.038	103.371	47	Leonardus '69	1.76	Geier '36	-	-			17.03	0.038	0.027
		-	-	-	-	-	-	-	-	-	-			-	-	-
		-	-	-	-	-	-	-	-	-	-			-	-	-
Chloroform	67-66-3	250		50.260	-	14.1-15.1	Backman '17	30	Passy 1893	-	-			119.38	133.000	661.564
Diisobutylene (DIB)	96-06-0	-	-	-	-			-	-	0.14	5.3			112.22	5.30	24.782
Diphenylamine (DPA)	122-39-4	-	-	-	-	0.0213-0.0241	Backman '17	-	-	-	-			169.22	0.022	0.155
Ethylene	74-85-1	269	-	230.128	-	-	-	-	-	-	-			28.05	17.000	19.872
		-	-	-	-	-	-	-	-	-	-			-	-	-
Hydrogen Sulphide	7783-06-4	0.0007	14	0.00049	10.04	0.00046-0.00465	Leonardus '69	7.04E-05	Henning '24	-	-	10 (odour & health) - Sch.2, 13 (odour) - Sch.3 10min		34.08	0.010	0.0130
		-	-	-	-	0.0044	Wilby '69	0.12676	Katz '30	-	-			-	-	-
		-	-	-	-	-	-	1.48E-4-1.126E-3	Lindvall '70	-	-			-	-	-
		-	-	-	-	-	-	-	-	-	-			-	-	-
		-	-	-	-	-	-	-	-	-	-			-	-	-
		-	-	-	-	-	-	-	-	-	-			-	-	-
		-	-	-	-	-	-	-	-	-	-			-	-	-
NO ₂	10102-44-0	2 (NO ₂)	20 (NO ₂)	1.043	1.063	-	-	0.104-0.417	Henschler '60	-	-	-		46.01	0.140	0.268
Toluene	108-88-3	8.025	750	2.090	199.018	7	Hellman '73, '74	0.156	Hellman '73, '74	1.618	-	2000 (Odour) - Sch.1&2, Guide 24 TBU		92.14	1.618	6.210
		-	-	-	-	-	-	15.628	Dravnieks '74	-	-			-	-	-
		-	-	-	-	-	-	-	-	-	-			-	-	-
		-	-	-	-	-	-	-	-	-	-			-	-	-
		-	-	-	-	-	-	-	-	-	-			-	-	-
		-	-	-	-	-	-	-	-	-	-			-	-	-
		-	-	-	-	-	-	-	-	-	-			-	-	-

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* Values are for m-xylene
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Table B.2

Summary of Tier II Odour Dispersion Modelling Runs
2025 Annual Environmental Report
LANXESS Canada Co./Cie
Elmira, Ontario

			AERMOD Model Runs						
Compound	Odour Detection Threshold (DET) (µg/m³)	Model Selected	Residential Receptor Grid						
			Maximum 1-Hour Concentration (µg/m³) ^[1]	Location of Maximum		Time When 1-Hr Maximum Occurs YYMMDDHH	Met Conditions at Maximum		Tier II 10-Minute Maximum (µg/m³) ^[1]
				X	Y		WS	WD	
Ammonia	27	AERMOD v.24142	2.3	536050.10	4826826	00121305	1.0	64	3.7
Chloroform	661,564	AERMOD v.24142	1.3	536050.10	4826826	00121305	1.0	64	2.1
Diisobutylene	24,782	AERMOD v.24142	1,518	536108.60	4826957	97041102	1.0	100	2,505
Diphenylamine	155	AERMOD v.24142	12.8	536034.80	4826706	97021306	1.0	42	21.1
Ethylene	19,872	AERMOD v.24142	21.7	536090.10	4826996	98091505	1.0	57	35.7
Hydrogen Sulphide	13	AERMOD v.24142	0.1	536030.10	4826651	99121202	1.0	97	0.1
Nitrogen Oxides	268	AERMOD v.24142	160	536085.40	4827153	98062203	1.0	145	265
Toluene	6,210	AERMOD v.24142	516	536108.60	4826957	96022723	1.0	138	851

Time Averaging Factors using Stability Conversions: (t_L/t_S)^P

Model	P	Conversion Factor	
AERMOD	0.28	1.65	(1 hr to 10 min)

Notes:

- DET - Odour Detection Threshold.
- $\mu\text{g}/\text{m}^3$ - Microgram per cubic metre.
- WS - Wind Speed (metres/second).
- WD - Direction towards wind is blowing (degrees clockwise from North).
- t_L - Long averaging time.
- t_S - Short Averaging Time.
- P - 0.28 atmospheric stability factor based on MOE modelling guidance.
- [1] - Based on 2008 MOE Odour Modelling Guidance.



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