GOLDER
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REPORT

Ambient Air Quality Monitoring (VOCs) Report - December 2021

Akzo Nobel Pty Ltd

Submitted to:

Akzo Nobel Pty Ltd
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Submitted by:

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The results of the tests, calibrations and/or measurements included in this document are traceable to Australian / national standards.

Record of Issue

Company	Client Contact	Version	Date Issued	Method of Delivery	Amendment
AzkoNobel Pty Ltd	David Grubits	Rev0	03/02/2022	Electronic	Original

Distribution List

1x AkzoNobel Pty Ltd

1x Golder Associates Pty Ltd

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1.0 INTRODUCTION

Golder Associates Pty Ltd (Golder) was commissioned by AkzoNobel Pty Ltd (AkzoNobel) to conduct an ambient air quality monitoring programme at the AkzoNobel site located at 51 McIntyre Road, Sunshine North (the site). The aim of the monitoring program was to assess Volatile Organic Compounds (VOCs) at the site boundary in accordance with the scope outlined in Golder Proposal No. 19130795-014-TM-Rev0, issued on 14/04/2021.

The assessment has been conducted in response to an Amended Clean Up Notice issued to AkzoNobel by the Environment Protection Authority (EPA VIC) issued on 24/12/2020 (CUN No. 90011933).

The following report describes the scope of works, test methods used, and the VOC monitoring results for December 2021.

2.0 SCOPE OF WORKS

2.1 Monitoring Schedule

The VOCs monitoring programme was conducted during December 2021 around the boundary of the AkzoNobel site in Sunshine North. The VOC monitoring consisted of samples being deployed on a 1-in-6-day sampling schedule for a period of 24 hours. The installation and collection dates for the samplers are presented in Table 1.

Table 1: Installation and Collection dates

Round No.	Installation Date	Collection Date
40	Sunday 5th December 2021	Monday 6th December 2021
41	Saturday 11th December 2021	Sunday 12th December 2021
42	Friday 17th December 2021	Saturday 18th December 2021
43	Thursday 23rd December 2021	Friday 24th December 2021
44	Wednesday 29th December 2021	Thursday 30th December 2021

2.2 Sampling Locations

Eight sampling locations were selected around the site boundary to represent and characterise the off-site emissions. (Figure 1).

Figure 1: AkzoNobel fence line (green) and air quality (VOCs) sampling locations (labelled pins)

3.0 TEST METHODS

Toluene, ethyl benzene and total xylene isomers monitoring was carried out in accordance with Golder Associates Test Method No. P13, *"Passive Gas Sampling: In Ambient Air by Radiello Passive Samplers"*.

Diffusive samplers consist of a diffusive barrier through which gases of interest can pass to a separate sorbent section. Gases of interest diffuse across the barrier driven by a concentration gradient and are collected in the sorbent material. The sorbent section is then desorbed in a suitable solvent and analysed by gas chromatography with flame ionisation detection (GC-FID).

Table 2: Reporting Limits

Compound	Limit of Detection* ($\mu g/m^3$)
Toluene	10
Ethylbenzene	10
m,p-Xylene	10
o-Xylene	10

* Based on a 24 hour sampling period

4.0 UNCERTAINTY

Experiments conducted in a standard atmosphere chamber suggest that the calculated sampling rates for Radiello adsorbing cartridges seldom deviate by more than ± 10% from the experimentally measured values.

The estimated measurement uncertainty for analysis of the target compounds on Radiello absorbing cartridges is ± 10%. The specific measurement uncertainty for each compound is detailed in Table 3.

Table 3: Analytical Uncertainty

VOC Compound	Measurement Uncertainty
Ethylbenzene	2.5%
Toluene	1.5%
Xylene (m-, o- and p-)	2.5% (each)

5.0 AMBIENT AIR QUALITY CRITERIA

As part of the implementation of the Environment Protection Act 2017 which came into effect on 1 July 2021, the Environment Protection Authority, Victoria (EPA Vic), published the draft Guideline for assessing and minimising air pollution in Victoria, Publication 1961, May 2021 (draft guideline). The National Environmental Protection (Air Toxics) Measure, (NEPM (Air Toxics)), describes air quality objectives and sampling methodologies at sites where significantly elevated concentrations of one or more air toxics are expected to occur.

For the purposes of this assessment, the contaminants of interest (toluene, ethylbenzene and total xylene) observations will be compared directly to their corresponding NEPM (Air Toxics) criteria and Victoria Environment Protection Authority's Draft Air Quality Assessment Criteria (AQAC) (Table 4).

Table 4: Ambient Air Quality Criteria for the AkzoNobel Air Quality Monitoring Program

VOC Compound	Averaging Period	NEPM (Air Toxics)	Draft Air Quality Assessment Criteria (AQAC)
		Concentration (µg/m^3)	
Toluene	24-hr	3766	
Ethylbenzene	24-hr		21712
Xylenes	24-hr	1085	8685

Notes: µg/m^3 = micrograms per cubic metre of air at 25 °C and 101.3 kPa

6.0 RESULTS

6.1 VOCs

The results of the VOC monitoring for toluene, ethylbenzene and total xylene isomers for each round of the monitoring programme are presented in Table 5 to Table 9.

Table 5: Round 40 – 06-12-2021

Sample No	Location	Sample period		Concentration (µg/m^3)		
		Start	End	Toluene	Ethylbenzene	Total Xylenes
21-2359	North West	05-12-2021 10:38	06-12-2021 11:37	<10	<10	<20
21-2360	North	05-12-2021 10:49	06-12-2021 11:43	<10	<10	<20
21-2361	North East	05-12-2021 10:59	06-12-2021 11:50	<10	<10	<20
21-2362	East	05-12-2021 11:07	06-12-2021 11:56	<10	<10	<20
21-2363	South East	05-12-2021 11:13	06-12-2021 12:01	<10	<10	<20
21-2364	South	05-12-2021 11:22	06-12-2021 12:08	<10	<10	<20
21-2365	South West	05-12-2021 11:29	06-12-2021 12:16	<10	<10	<20
21-2366	West	05-12-2021 11:36	06-12-2021 12:22	<10	<10	<20

Notes: Concentration expressed at 0°C and 101.325 kPa.
Analysis commenced on 20-01-2021, conducted by Golder Associates.

Table 6: Round 41 – 12-12-2021

Sample No	Location	Sample period		Concentration (µg/m^3)		
		Start	End	Toluene	Ethylbenzene	Total Xylenes
21-2393	North West	11-12-2021 09:30	12-12-2021 10:29	<10	<10	<20
21-2394	North	11-12-2021 09:40	12-12-2021 10:36	<10	<10	<20
21-2395	North East	11-12-2021 09:50	12-12-2021 10:43	<10	<10	<20
21-2396	East	11-12-2021 09:58	12-12-2021 10:49	<10	<10	<20
21-2397	South East	11-12-2021 10:05	12-12-2021 10:55	<10	<10	<20
21-2398	South	11-12-2021 10:12	12-12-2021 11:01	<10	<10	<20
21-2399	South West	11-12-2021 10:19	12-12-2021 11:08	<10	<10	<20
21-2400	West	11-12-2021 10:26	12-12-2021 11:12	<10	<10	<20

Notes: Concentration expressed at 0°C and 101.325 kPa.
Analysis commenced on 20-01-2021, conducted by Golder Associates.

Table 7: Round 42 – 18-12-2021

Sample No	Location	Sample period		Concentration (µg/m^3)		
		Start	End	Toluene	Ethylbenzene	Total Xylenes
21-2508	North West	17-12-2021 11:46	18-12-2021 12:19	<10	<10	<20
21-2509	North	17-12-2021 11:54	18-12-2021 12:25	<10	<10	<20
21-2510	North East	17-12-2021 12:00	18-12-2021 12:30	<10	<10	<20
21-2511	East	17-12-2021 12:05	18-12-2021 12:35	<10	<10	<20
21-2512	South East	17-12-2021 12:10	18-12-2021 12:41	<10	<10	<20
21-2513	South	17-12-2021 12:17	18-12-2021 12:47	<10	<10	<20
21-2514	South West	17-12-2021 12:27	18-12-2021 12:55	<10	<10	<20
21-2515	West	17-12-2021 12:29	18-12-2021 13:04	<10	<10	<20

Notes: Concentration expressed at 0°C and 101.325 kPa.
Analysis commenced on 20-01-2021, conducted by Golder Associates.

Table 8: Round 43 – 24-12-2021

Sample No	Location	Sample period		Concentration (µg/m^3)		
		Start	End	Toluene	Ethylbenzene	Total Xylenes
21-2567	North West	23-12-2021 09:29	24-12-2021 10:27	<10	<10	<20
21-2568	North	23-12-2021 09:40	24-12-2021 10:33	<10	<10	<20
21-2569	North East	23-12-2021 10:47	24-12-2021 11:15	<10	<10	<20
21-2570	East	23-12-2021 09:52	24-12-2021 10:42	<10	<10	<20
21-2571	South East	23-12-2021 10:04	24-12-2021 10:47	<10	<10	<20
21-2572	South	23-12-2021 10:14	24-12-2021 10:53	<10	<10	<20
21-2573	South West	23-12-2021 10:24	24-12-2021 10:58	<10	<10	<20
21-2574	West	23-12-2021 10:30	24-12-2021 11:06	<10	<10	<20

Notes: Concentration expressed at 0°C and 101.325 kPa.
Analysis commenced on 20-01-2021, conducted by Golder Associates.

Table 9: Round 44 – 30-12-2021

Sample No	Location	Sample period		Concentration (µg/m^3)		
		Start	End	Toluene	Ethylbenzene	Total Xylenes
21-2603	North West	29-12-2021 13:15	30-12-2021 13:02	<10	<10	<20
21-2604	North	29-12-2021 13:21	30-12-2021 13:09	<10	<10	<20
21-2597	North East	29-12-2021 12:39	30-12-2021 12:24	<10	<10	<20
21-2598	East	29-12-2021 12:45	30-12-2021 12:29	NR	NR	NR
21-2599	South East	29-12-2021 12:51	30-12-2021 12:35	<10	<10	<20
21-2600	South	29-12-2021 12:58	30-12-2021 12:40	<10	<10	<20
21-2601	South West	29-12-2021 13:04	30-12-2021 12:44	<10	<10	<20
21-2602	West	29-12-2021 13:10	30-12-2021 12:58	<10	<10	<20

Notes: Concentration expressed at 0°C and 101.325 kPa.
NR No result due to analysis error
Analysis commenced on 20-01-2021, conducted by Golder Associates.

6.2 Meteorological Conditions

The average meteorological conditions are summarised in Table 10. Wind rose plots for each sampling round are available Figure 2 to Figure 6.

Table 10: Summary of Wind Conditions

Round No	Start Date	End Date	Predominant Wind Direction (°)	Average Wind Speed (m/s)
40	05-12-2021	06-12-2021	S	2.5
41	11-12-2021	12-12-2021	SE	1.9
42	17-12-2021	18-12-2021	N-NE	2.7
43	23-12-2021	24-12-2021	S	1.6
44	29-12-2021	30-12-2021	S	3.3

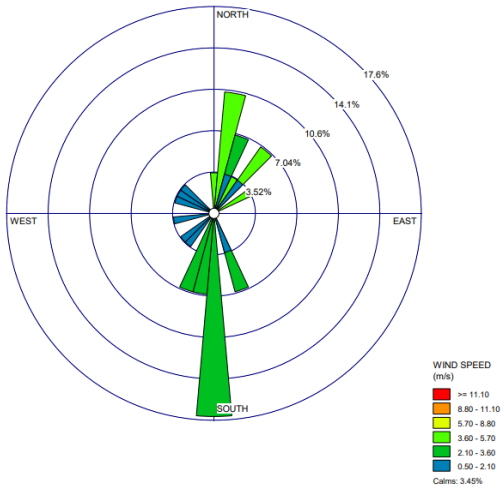

Figure 2: Round 40 – 06-12-2021

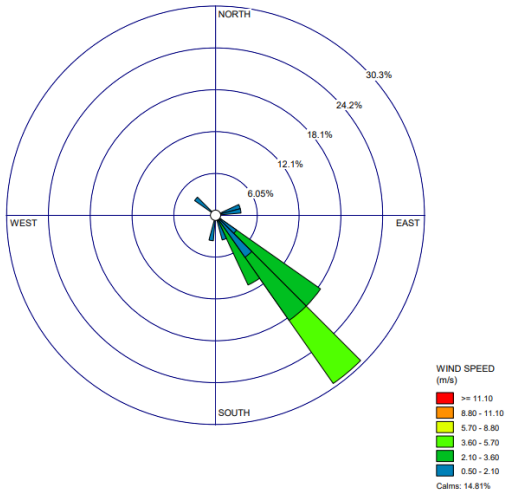

Figure 3: Round 41 – 12-12-2021

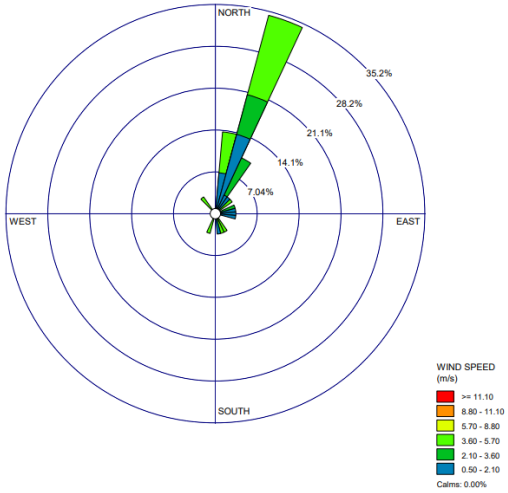

Figure 4: Round 42 – 18-12-2021

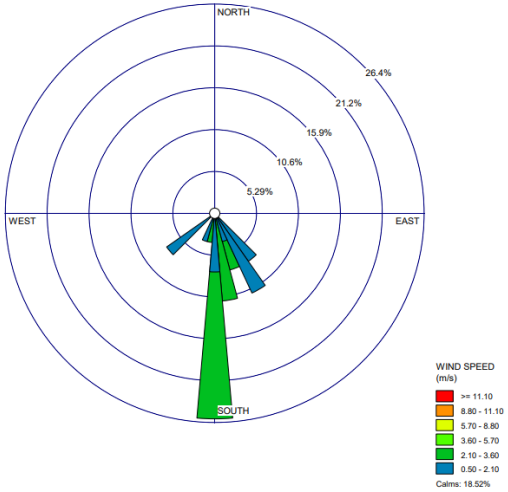

Figure 5: Round 43 – 24-12-2021

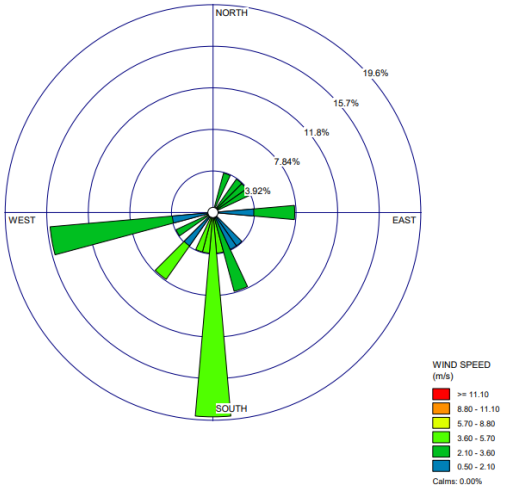

Figure 6: Round 44 – 30-12-2021

7.0 DISCUSSION

The VOC fence line monitoring conducted at AzkoNobel, Sunshine North during December 2021 did not detect any target compounds above the limit of reporting. All results were below the ambient air quality monitoring criteria for all target compounds.

8.0 IMPORTANT INFORMATION

Your attention is drawn to the document titled - “Important Information Relating to this Report”, which is included in Appendix A of this report. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder Associates has under the contract between it and its client.

Signature Page

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https://golderassociates.sharepoint.com/sites/115853/project files/6 deliverables/044-r- vocs monitoring - december 2021/19130795-044-r-rev0_vocs monitoring - december 2021.docx

APPENDIX A

Important Information

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