

**REPORT**

# Ambient Air Quality Monitoring (VOCs) Report - May 2021

*Akzo Nobel Pty Ltd*

Submitted to:

**Akzo Nobel Pty Ltd**

51 McIntyre Rd  
Sunshine North  
3020 VIC

Submitted by:

**Golder Associates Pty Ltd**

Building 7, Botanicca Corporate Park, 570 – 588 Swan Street, Richmond, Victoria 3121,  
Australia

+61 3 8862 3500

19130795-017-Rev0

July 2021



Accreditation No. 1910

Accredited for compliance with ISO/IEC 17025 - Testing

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	12/07/2021	Electronic	Original

## Distribution List

1x AkzoNobel Pty Ltd

1x Golder Associates Pty Ltd

# Table of Contents

<b>1.0 INTRODUCTION</b> .....	<b>1</b>
<b>2.0 SCOPE OF WORKS</b> .....	<b>1</b>
2.1 Monitoring Schedule .....	1
2.2 Sampling Locations .....	1
<b>3.0 TEST METHODS</b> .....	<b>2</b>
<b>4.0 UNCERTAINTY</b> .....	<b>3</b>
<b>5.0 AMBIENT AIR QUALITY CRITERIA</b> .....	<b>3</b>
<b>6.0 RESULTS</b> .....	<b>4</b>
6.1 VOCs .....	4
6.2 Meteorological Conditions .....	7
<b>7.0 DISCUSSION</b> .....	<b>8</b>
<b>8.0 IMPORTANT INFORMATION</b> .....	<b>9</b>

## TABLES

Table 1: Installation and Collection dates .....	1
Table 2: BTEX Reporting Limits .....	2
Table 3: Analytical Uncertainty .....	3
Table 4: Ambient Air Quality Criteria for the AkzoNobel Air Quality Monitoring Program .....	3
Table 5: Round 4 – 04-05-2021 .....	4
Table 6: Round 5 – 10-05-2021 .....	4
Table 7: Round 6 – 16-05-2021 .....	5
Table 8: Round 7 – 22-05-2021 .....	5
Table 9: Round 8 – 28-05-2021 .....	6
Table 10: Summary of Wind Conditions .....	8
Table 11: Summary .....	8

## FIGURES

Figure 1: AkzoNobel fence line (green) and air quality (VOCs) sampling locations (labelled pins) .....	2
Figure 2: Round 4 – 04-05-2021 .....	7
Figure 3: Round 5 – 10-05-2021 .....	7
Figure 4: Round 6 – 16-05-2021 .....	7

Figure 5: Round 7 – 22-05-2021 .....7  
Figure 6: Round 8 – 28-05-2021 .....7

**APPENDICES**

**APPENDIX A**  
Important Information

## 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 April 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 May 2021.

## 2.0 SCOPE OF WORKS

### 2.1 Monitoring Schedule

The VOCs monitoring programme was conducted during May 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
4	Monday 3 <sup>rd</sup> May 2021	Tuesday 4 <sup>th</sup> May 2021
5	Sunday 9 <sup>th</sup> May 2021	Monday 10 <sup>th</sup> May 2021
6	Saturday 15 <sup>th</sup> May 2021	Sunday 16 <sup>th</sup> May 2021
7	Friday 21 <sup>st</sup> May 2021	Saturday 22 <sup>nd</sup> May 2021
8	Thursday 27 <sup>th</sup> May 2021	Friday 28 <sup>th</sup> May 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

Benzene, Toluene, Ethyl benzene, Xylene isomers (BTEX) 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 are allowed to 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: BTEX Reporting Limits

Compound	Limit of Detection* ( $\mu\text{g}/\text{m}^3$ )
Benzene	20
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  $\pm 10\%$  from the experimentally measured values.

The estimated measurement uncertainty for analysis of BTEX on Radiello adsorbing cartridges is  $\pm 10\%$ . 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

The National Environment Protection (Air Toxics) Measure (NEPC 1994) includes 24-hr criteria for toluene and total xylenes. There are no available NEPM (Air Toxics) criteria for ethylbenzene.

For the purposes of this assessment toluene and total xylene observations will be compared directly to their corresponding NEPM (Air Toxics) criteria (Table 4).

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

VOC Compound	NEPM (Air Toxics)	
	Averaging Period	Criteria ( $\mu\text{g}/\text{m}^3$ )
Toluene	24-hr	3766
Xylenes	24-hr	1085

Notes:  $\mu\text{g}/\text{m}^3$  = 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 4 – 04-05-2021**

Sample No	Location	Sample period		Concentration ( $\mu\text{g}/\text{m}^3$ )		
		Start	End	Toluene	Ethylbenzene	Total Xylenes
21-763	West	03-05-2021 14:41	04-05-2021 14:20	<7	<7	<20
21-764	South West	03-05-2021 14:53	04-05-2021 14:35	<7	<7	<20
21-765	South	03-05-2021 14:59	04-05-2021 14:43	<7	<7	<20
21-766	South East	03-05-2021 15:05	04-05-2021 14:51	<7	<7	<20
21-767	East	03-05-2021 15:11	04-05-2021 14:58	<7	<7	<20
21-768	North East	03-05-2021 15:15	04-05-2021 15:06	<7	<7	<20
21-769	North	03-05-2021 15:23	04-05-2021 15:15	<7	<b>15</b>	<b>110</b>
21-770	North West	03-05-2021 15:27	04-05-2021 15:22	<7	<7	<20

**Notes:** Concentration expressed at 0°C and 101.325 kPa.

Analysis commenced on 10-06-2021, conducted by Golder Associates.

**Table 6: Round 5 – 10-05-2021**

Sample No	Location	Sample period		Concentration ( $\mu\text{g}/\text{m}^3$ )		
		Start	End	Toluene	Ethylbenzene	Total Xylenes
21-793	West	09-05-2021 11:43	10-05-2021 11:55	<7	<7	<20
21-794	South West	09-05-2021 11:53	10-05-2021 12:01	<7	<7	<20
21-795	South	09-05-2021 12:03	10-05-2021 12:07	<7	<b>16</b>	<b>140</b>
21-796	South East	09-05-2021 12:13	10-05-2021 12:15	<7	<7	<20
21-797	East	09-05-2021 12:20	10-05-2021 12:20	<7	<7	<20
21-798	North East	09-05-2021 12:27	10-05-2021 12:27	<7	<7	<20
21-799	North	09-05-2021 12:39	10-05-2021 12:36	<7	<7	<20
21-800	North West	09-05-2021 12:46	10-05-2021 12:42	<7	<7	<20

**Notes:** Concentration expressed at 0°C and 101.325 kPa.

Analysis commenced on 10-06-2021, conducted by Golder Associates.



**Table 7: Round 6 – 16-05-2021**

Sample No	Location	Sample period		Concentration ( $\mu\text{g}/\text{m}^3$ )		
		Start	End	Toluene	Ethylbenzene	Total Xylenes
21-858	West	15-05-2021 15:59	16-05-2021 16:01	<7	<7	<20
21-859	South West	15-05-2021 16:09	16-05-2021 16:07	<7	<7	<20
21-860	South	15-05-2021 16:44	16-05-2021 16:14	<7	<7	<20
21-861	South East	15-05-2021 16:55	16-05-2021 16:47	<b>8.3</b>	<7	<b>25</b>
21-862	East	15-05-2021 17:03	16-05-2021 17:03	NR	NR	NR
21-863	North East	15-05-2021 17:13	16-05-2021 16:54	<7	<7	<20
21-864	North	15-05-2021 17:25	16-05-2021 17:05	<7	<7	<20
21-865	North West	15-05-2021 17:34	16-05-2021 17:12	<7	<7	<20

**Notes:** Concentration expressed at 0°C and 101.325 kPa.

NR – No result due to sample stolen from site.

Analysis commenced on 10-06-2021, conducted by Golder Associates.

**Table 8: Round 7 – 22-05-2021**

Sample No	Location	Sample period		Concentration ( $\mu\text{g}/\text{m}^3$ )		
		Start	End	Toluene	Ethylbenzene	Total Xylenes
21-871	West	21-05-2021 15:35	22-05-2021 15:19	<7	<7	<20
21-872	South West	21-05-2021 15:40	22-05-2021 15:23	<7	<7	<20
21-873	South	21-05-2021 15:45	22-05-2021 15:28	<7	<7	<b>100</b>
21-874	South East	21-05-2021 16:04	22-05-2021 15:53	<b>19</b>	<7	<20
21-875	East	21-05-2021 16:24	22-05-2021 15:34	<7	<8	<20
21-876	North East	21-05-2021 16:30	22-05-2021 15:38	<7	<8	<20
21-877	North	21-05-2021 15:53	22-05-2021 15:43	<b>9.1</b>	<7	<20
21-878	North West	21-05-2021 15:30	22-05-2021 15:14	<b>36</b>	<7	<20

**Notes:** Concentration expressed at 0°C and 101.325 kPa.

Analysis commenced on 10-06-2021, conducted by Golder Associates.

**Table 9: Round 8 – 28-05-2021**

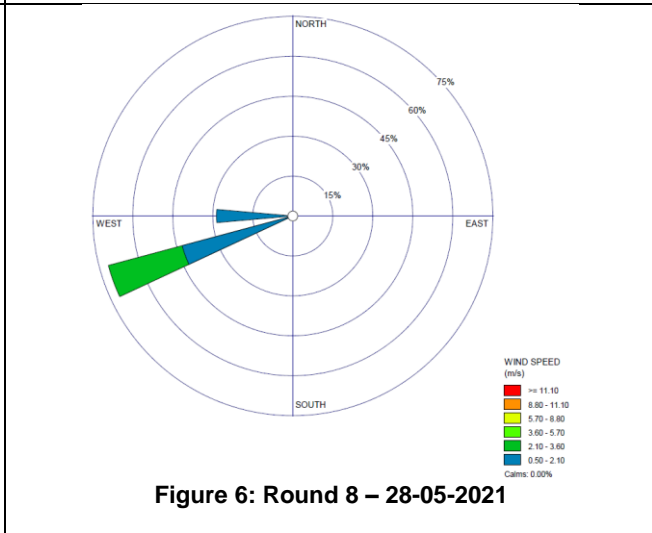
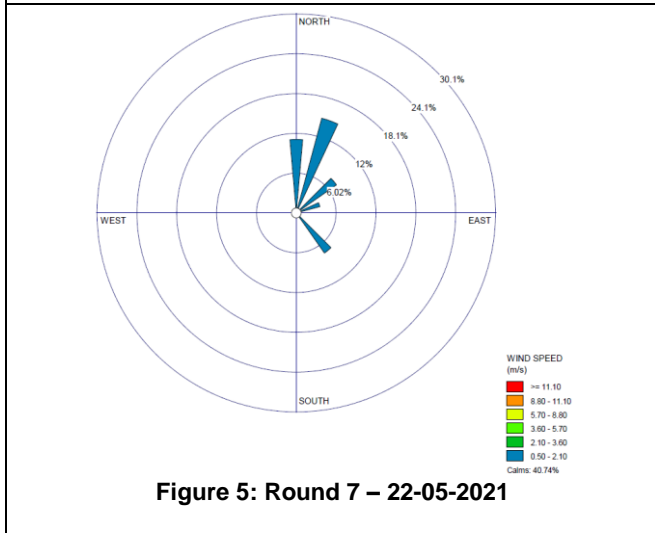
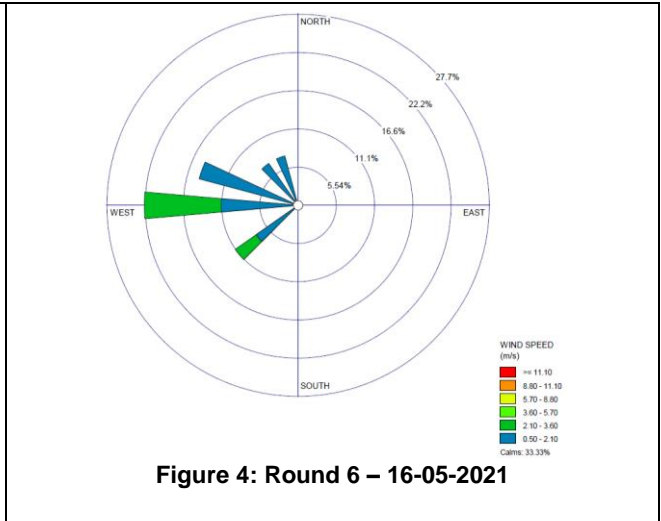
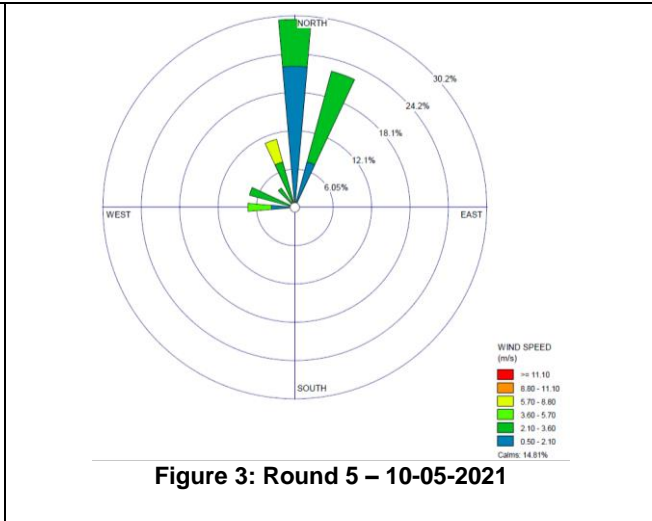
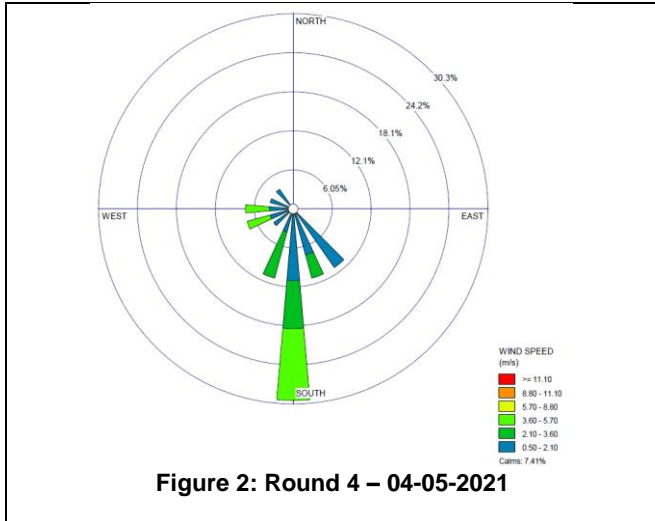
Sample No	Location	Sample period		Concentration ( $\mu\text{g}/\text{m}^3$ )		
		Start	End	Toluene	Ethylbenzene	Total Xylenes
21-938	West	27-05-2021 10:46	28-05-2021 11:37	<7	<7	<20
21-939	South West	27-05-2021 11:11	28-05-2021 11:42	<7	<7	<20
21-940	South	27-05-2021 11:18	28-05-2021 11:47	<b>14</b>	<b>31</b>	<b>120</b>
21-941	South East	27-05-2021 11:28	28-05-2021 11:52	<7	<7	<20
21-942	East	27-05-2021 11:36	28-05-2021 11:57	<b>18</b>	<b>16</b>	<b>110</b>
21-943	North East	27-05-2021 11:43	28-05-2021 12:03	<7	<b>36</b>	<b>190</b>
21-944	North	27-05-2021 11:53	28-05-2021 12:11	<7	<7	<20
21-945	North West	27-05-2021 12:01	28-05-2021 12:17	<7	<7	<20

**Notes:** Concentration expressed at 0°C and 101.325 kPa.

Analysis commenced on 10-06-2021, 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 below.



**Table 10: Summary of Wind Conditions**

Round No	Start Date	End Date	Predominant Wind Direction (°)	Average Wind Speed (m/s)
4	03-05-2021	04-05-2021	S	2.0
5	09-05-2021	10-05-2021	N	1.9
6	15-05-2021	16-05-2021	W	1.1
7	21-05-2021	22-05-2021	N to NE	0.6
8	27-05-2021	28-05-2021	WSW	1.5

## 7.0 DISCUSSION

A summary of compounds detected above the method limit of detection, compared with the predominant wind direction and ambient air quality criteria is presented in Table 11.

**Table 11: Summary**

Location	Sample Date	Concentration ( $\mu\text{g}/\text{m}^3$ )			Predominant Wind Direction
		Toluene	Ethylbenzene	Total Xylenes	
North	04-05-2021	<7	15	110	S
South	10-05-2021	<7	16	140	N
South East	16-05-2021	8.3	<7	25	W
South	22-05-2021	<7	<7	100	N to NE
South East	22-05-2021	19	<7	<20	N to NE
North	22-05-2021	9.1	<7	<20	N to NE
North West	22-05-2021	36	<7	<20	N to NE
South	28-05-2021	14	31	120	WSW
East	28-05-2021	18	16	110	WSW
North East	28-05-2021	<7	36	190	WSW
<b>Criteria</b>		<b>3766</b>	<b>NA</b>	<b>1085</b>	

The VOC fence line monitoring conducted at AzkoNobel, Sunshine North during May 2021 reported all results below the ambient air quality monitoring criteria for all reported 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

## Golder Associates Pty Ltd



Florence Damour  
*Environmental Scientist*



Mark Tulau  
*Air Quality Specialist*

FMD/MT/fmd

A.B.N. 64 006 107 857

Golder and the G logo are trademarks of Golder Associates Corporation

[https://golderassociates.sharepoint.com/sites/115853/project files/6 deliverables/017-r-vocs monitoring - may 2021/19130795-017-r-rev0\\_vocs monitoring - may 2021.docx](https://golderassociates.sharepoint.com/sites/115853/project%20files/6%20deliverables/017-r-vocs%20monitoring%20-%20may%202021/19130795-017-r-rev0_vocs%20monitoring%20-%20may%202021.docx)

**APPENDIX A**

# Important Information

The document ("Report") to which this page is attached and which this page forms a part of, has been issued by Golder Associates Pty Ltd ("Golder") subject to the important limitations and other qualifications set out below.

This Report constitutes or is part of services ("Services") provided by Golder to its client ("Client") under and subject to a contract between Golder and its Client ("Contract"). The contents of this page are not intended to and do not alter Golder's obligations (including any limits on those obligations) to its Client under the Contract.

This Report is provided for use solely by Golder's Client and persons acting on the Client's behalf, such as its professional advisers. Golder is responsible only to its Client for this Report. Golder has no responsibility to any other person who relies or makes decisions based upon this Report or who makes any other use of this Report. Golder accepts no responsibility for any loss or damage suffered by any person other than its Client as a result of any reliance upon any part of this Report, decisions made based upon this Report or any other use of it.

This Report has been prepared in the context of the circumstances and purposes referred to in, or derived from, the Contract and Golder accepts no responsibility for use of the Report, in whole or in part, in any other context or circumstance or for any other purpose.

The scope of Golder's Services and the period of time they relate to are determined by the Contract and are subject to restrictions and limitations set out in the Contract. If a service or other work is not expressly referred to in this Report, do not assume that it has been provided or performed. If a matter is not addressed in this Report, do not assume that any determination has been made by Golder in regards to it.

At any location relevant to the Services conditions may exist which were not detected by Golder, in particular due to the specific scope of the investigation Golder has been engaged to undertake. Conditions can only be verified at the exact location of any tests undertaken. Variations in conditions may occur between tested locations and there may be conditions which have not been revealed by the investigation and which have not therefore been taken into account in this Report.

Golder accepts no responsibility for and makes no representation as to the accuracy or completeness of the information provided to it by or on behalf of the Client or sourced from any third party. Golder has assumed that such information is correct unless otherwise stated and no responsibility is accepted by Golder for incomplete or inaccurate data supplied by its Client or any other person for whom Golder is not responsible. Golder has not taken account of matters that may have existed when the Report was prepared but which were only later disclosed to Golder.

Having regard to the matters referred to in the previous paragraphs on this page in particular, carrying out the Services has allowed Golder to form no more than an opinion as to the actual conditions at any relevant location. That opinion is necessarily constrained by the extent of the information collected by Golder or otherwise made available to Golder. Further, the passage of time may affect the accuracy, applicability or usefulness of the opinions, assessments or other information in this Report. This Report is based upon the information and other circumstances that existed and were known to Golder when the Services were performed and this Report was prepared. Golder has not considered the effect of any possible future developments including physical changes to any relevant location or changes to any laws or regulations relevant to such location.

Where permitted by the Contract, Golder may have retained subconsultants affiliated with Golder to provide some or all of the Services. However, it is Golder which remains solely responsible for the Services and there is no legal recourse against any of Golder's affiliated companies or the employees, officers or directors of any of them.

By date, or revision, the Report supersedes any prior report or other document issued by Golder dealing with any matter that is addressed in the Report.

**Any uncertainty as to the extent to which this Report can be used or relied upon in any respect should be referred to Golder for clarification**





**[golder.com](http://golder.com)**