



ENVIRONMENT REPORT

AIR MONITORING REPORT 2007 – COMPLIANCE WITH THE NATIONAL ENVIRONMENT PROTECTION (AMBIENT AIR QUALITY) MEASURE

Publication 1231 June 2008

OVERVIEW

This report presents the results of air quality monitoring in Victoria and assesses them against the requirements of the *Ambient Air Quality National Environment Protection Measure*¹ (AAQ NEPM). EPA also produces an annual air quality summary and data tables on its website.²

The major impacts on Victoria's air quality in 2007 came from the bushfires experienced in January and from planned burning in April. These fires (for example, the one on 9 January shown in Figure 1) led to a relatively high number of days when the particle standards were not met and an increase in the number of exceedences of the ozone standard. However, there were fewer exceedences than in 2006, which was also affected by bushfires.

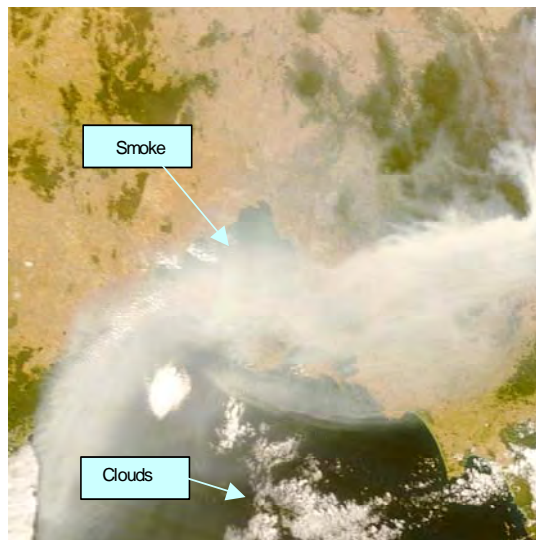


Figure 1: Bushfire smoke over Melbourne, 9 January 2007

(Satellite image courtesy of MODIS Rapid Response Project at NASA/GSFC)

Windblown dust and accumulation of combustion particles in calm, highly stable air also resulted in days when the particle standards were not met. At other times, Victoria's air was generally clean.

The AAQ NEPM establishes:

- requirements for monitoring air quality
- air quality standards that are levels of specified pollutants against which air quality can be assessed
- a goal that the air quality standards are met by 2008 to the extent specified in the NEPM. Recognising that certain events can impact on air quality, the NEPM specifies a maximum number of days on which it is permissible to exceed the standard.

Monitoring was performed in accordance with Victoria's monitoring plan³, AAQ NEPM Technical Papers and EPA's NATA accreditation.

The AAQ NEPM goals were met for carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃) and sulfur dioxide (SO₂) at all monitoring stations where there was sufficient data capture to demonstrate compliance.

PM₁₀ did not meet the 2008 goal at Geelong South, mainly due to windblown dust, and at Mooroolbark and Moe, mainly due to bushfires and planned burning.

The one-hour and/or four-hour standards for O₃ were exceeded at all stations except Geelong South, Melton, Mooroolbark and Warrnambool. All exceedences were on days when there were bushfires. The 2008 goal was met at all stations with sufficient data to demonstrate compliance.

The 24-hour advisory reporting standard for particles (as PM_{2.5}) was exceeded at the two stations monitoring in the Port Phillip region. The annual reporting standard for PM_{2.5} was equalled at Alphington.

Data capture targets were achieved at all stations that operated for the full year, except for PM₁₀ at Moe and O₃ at Melton. In each case instrument malfunctions reduced the data capture to below 75 per cent in one quarter.

¹ *National Environment Protection Measure for Ambient Air Quality*, National Environment Protection Council publication, available from www.ephc.gov.au.

² www.epa.vic.gov.au/air/monitoring/air_monitoring_report_2007.asp

³ *Ambient Air Quality NEPM Monitoring Plan Victoria*, (EPA publication 763), available from www.epa.vic.gov.au, under 'Resources > Publications online'.

A. MONITORING SUMMARY

Current performance monitoring stations

Victoria's AAQ NEPM air monitoring plan was approved by the National Environment Protection Council Ministers in February 2001. Data presented in this report has been produced in accordance with the monitoring plan, except where noted.

The AAQ NEPM requires the monitoring of the pollutants carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxide (SO₂), lead (Pb), particles less than 10 micrometres in diameter (PM₁₀) and particles less than 2.5 micrometres in diameter (PM_{2.5}).

Eight regions are defined in the monitoring plan. Consistent with the monitoring plan:

- **Port Phillip** and **Latrobe Valley** regions have permanent performance monitoring stations
- campaign monitoring has been conducted in **Ballarat, Bendigo, Shepparton, Warrnambool, and Mildura**
- data from New South Wales monitoring at Albury has been used for **Wodonga**.

Stations at which monitoring was conducted in 2007 are shown in Figures 2 and 3.

The performance monitoring stations, pollutants monitored and site types are summarised in Table 1. Site types are defined as: *generally representative upper bound* for community exposure sites; and *population-average* sites (for definitions, see the National Environment Protection (Ambient Air Quality) Measure Technical Paper No. 3, *Monitoring Strategy*, available from www.ephc.gov.au).

Table 1: Victorian performance monitoring stations

Region	Location	Site type				
Performance monitoring station	category	CO	NO ₂	O ₃	SO ₂	PM ₁₀
Port Phillip						
	Res/LI	G*	G*	Pop	Pop*	G*
	I/Res				G	
	Res		G	Pop*		Pop
	LI			Pop		Pop
	I/Res		G*	G*		G*
	LI/Res	G*	G*	Pop*	G*	G*
	Res			G		
	Res			Pop		Pop
	Rur/Res		Pop*	G*		
	I/Rur			Pop		
	Res	G				G
	CBD	G*	G*		G	G*
Latrobe Valley						
	Res		Pop	G	G	G
	Res		G*	G*	G*	G*

RMIT (CBD)	RMIT University (central business district)	I	Industrial
LI	Light industrial	Res	Residential
Rur	Rural	G	Generally representative upper bound
Pop	Population-average	*	Trend station
A	RMIT station closed in 2006. Alternatives will be considered as part of an overall review of Victoria's monitoring plan.		

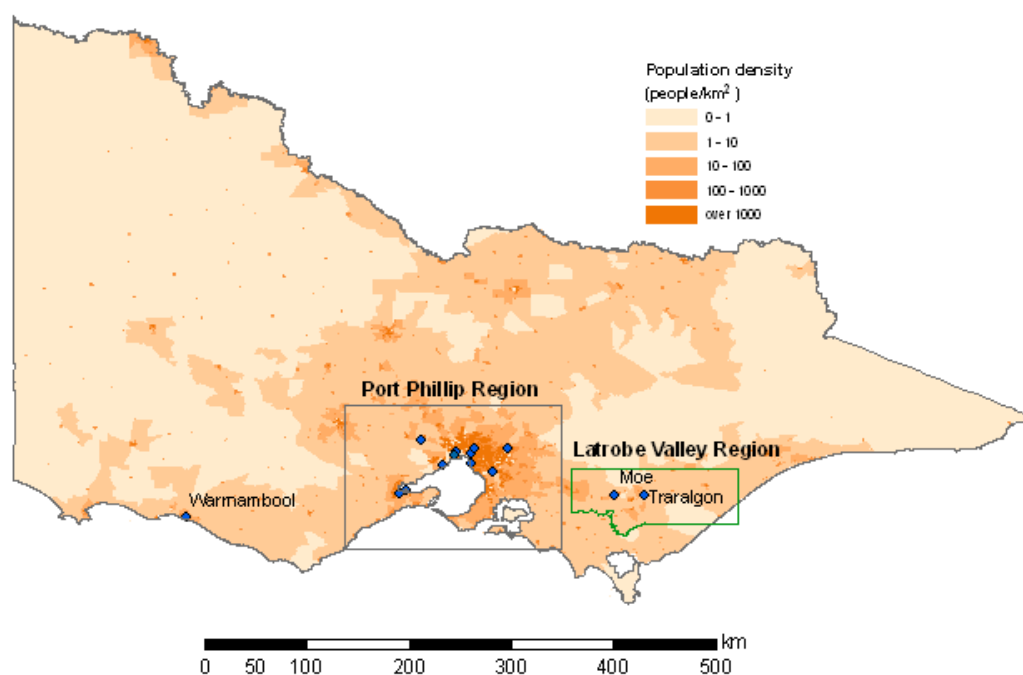


Figure 2: AAQ NEPM regions and population density in Victoria.

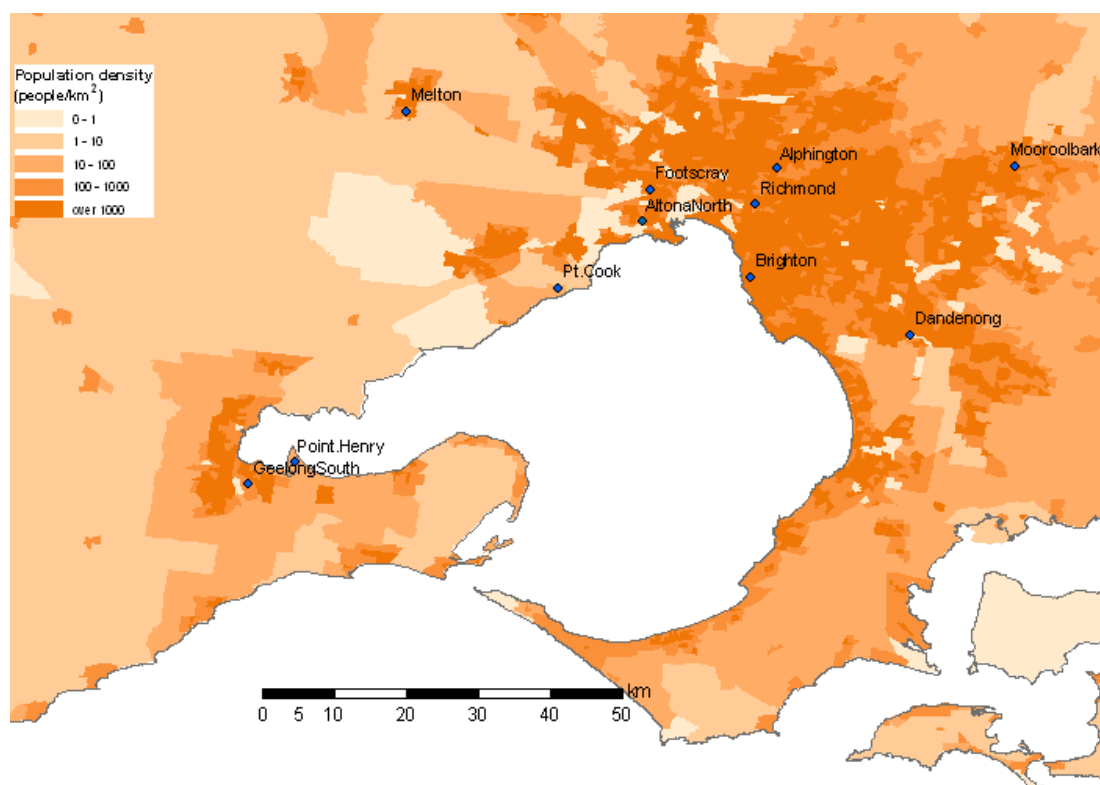


Figure 3: Monitoring stations and population density in Port Phillip region.

Description of exposed population

The exposed population represented by each monitoring station is described qualitatively by the location category column in Tables 1 and 2. Further information is given in Appendix C of the monitoring plan.

Implementation of the monitoring plan

In addition to the performance monitoring stations specified in the monitoring plan, a 12-month mobile monitoring campaign commenced at Warrnambool for the first time in October 2006 and ceased in October 2007 (see Figure 4).



Figure 4: Campaign monitoring station at Warrnambool

Monitoring ceased at the CBD station (at RMIT University) in October 2006, when the lease was terminated due to building extensions. Options for an alternative CBD site will be considered as part of an overall review of Victoria's monitoring plan that is being undertaken in 2008.

The Southwest Metro station at Paisley was renamed Altona North in June 2006 to better reflect its geographic location.

The peak station for lead, in Collingwood, was closed in December 2004 because levels were so low. This change to Victoria's monitoring plan was approved in accordance with NEPM procedures.⁴

Each of the monitoring stations meets the recommendations of the Australian standard for siting of sampling units as shown in Table 2. Alphington, Richmond and Moe continue to have minor non-compliances due to the proximity of trees. However,

this does not materially affect the air quality data from these sites.

Monitoring methods

Victorian monitoring is conducted in accordance with the standards shown in Table 3. Data not meeting the requirements of these standards and EPA's quality assurance procedures is identified as invalid and not included in reporting.

Particle concentration units of $\mu\text{g}/\text{m}^3$ refer to volumes at 0 °C and one atmosphere.

TEOM PM_{10} data included in this report has been adjusted according to the approved procedure⁵, using the temperature-dependent formula with a constant value of K equal to 0.04. The resulting adjustments vary from no change at daily average temperatures at or above 15 °C to an increase of 40 per cent at a temperature of 5 °C.

⁴ National Environment Protection (Ambient Air Quality) Measure Technical Paper No. 9, *Lead Monitoring*, available from www.ephc.gov.au.

⁵ National Environment Protection (Ambient Air Quality) Measure Technical Paper No. 10, *Collection and Reporting of TEOM PM_{10} Data*, available from www.ephc.gov.au.

Table 2: Summary of stations' siting compliance with AS 2922-1987

Region Station	Location category	Height above ground	Minimum distance to support structure	Clear sky angle of 120°	Unrestricted airflow of 270°/360°	20 m from trees	No boilers or incinerators nearby	Minimum distance from road or traffic
Port Phillip								
Alphington	Res/LI	☑	☑	☑	☑	☒	☑	☑
Altona North	I/Res	☑	☑	☑	☑	☑	☑	☑
Brighton	Res	☑	☑	☑	☑	☑	☑	☑
Dandenong	LI	☑	☑	☑	☑	☑	☑	☑
Footscray	I/Res	☑	☑	☑	☑	☑	☑	☑
Geelong South	LI/Res	☑	☑	☑	☑	☑	☑	☑
Melton	Res	☑	☑	☑	☑	☑	☑	☑
Mooroolbark	Res	☑	☑	☑	☑	☑	☑	☑
Point Cook	Rur/Res	☑	☑	☑	☑	☑	☑	☑
Point Henry	I/Rur	☑	☑	☑	☑	☑	☑	☑
Richmond	Res	☑	☑	☑	☑	☒	☑	☑
Latrobe Valley								
Moe	Res	☑	☑	☑	☑	☒	☑	☑
Traralgon	Res	☑	☑	☑	☑	☑	☑	☑
Warrnambool								
	Res	☑	☑	☑	☑	☑	☑	☑

I Industrial

LI Light industrial

Res Residential

Rur Rural

Table 3: Methods for monitoring the NEPM pollutants

Pollutant	Standard	Title	Method Used
Carbon monoxide CO	AS3580.7.1-1992	Ambient Air - Determination of Carbon Monoxide - Direct Reading Instrument Method	Gas filter correlation/Infrared.
Nitrogen dioxide NO ₂	AS3580.5.1-1993	Ambient Air - Determination of Oxides of Nitrogen - Chemiluminescence Method	Gas phase chemiluminescence.
Photochemical oxidant (ozone) O ₃	AS3580.6.1-1990	Ambient Air - Determination of Ozone - Direct Reading Instrument Method	Non-dispersive ultraviolet.
Sulfur dioxide SO ₂	AS3580.4.1-1990	Ambient Air - Determination of Sulfur Dioxide - Direct Reading Instrument Method	Pulsed fluorescence
Particles	PM ₁₀	Determination of Suspended Particulate Matter - PM ₁₀ Continuous Direct Mass Method using a Tapered Element Oscillating Microbalance Analyser	Tapered element oscillating microbalance (TEOM).
	PM _{2.5}	AS/NZS3580.9.10-2006 ^a Reference Method for the Determination of Fine Particulate matter as PM _{2.5} in the Atmosphere	Gravimetric reference method
	PM _{2.5}	AS3580.9.8-2001 ^a Technical Paper on Monitoring for Particles as PM _{2.5}	TEOM

a Modified for use in the PM_{2.5} Equivalence Program according to the NEPM Technical Paper

NATA status

All performance monitoring stations and AAQ NEPM campaign monitoring operated by EPA are covered by its NATA accreditation (Number 1576). EPA was successfully reaccredited in 2006.

Monitoring in the Latrobe Valley region was performed for EPA by Connell Wagner PPI under its NATA accreditation (Number 4669).

Screening

The monitoring plan outlines processes to demonstrate whether levels of pollutants are consistently below the standards. Monitoring is not required, or may be at fewer than the specified number of stations, if screening procedures are satisfied.⁶ Screening procedures as indicated in Table 4 have been satisfied for Victorian regions.

Table 4: Screening procedures⁶ satisfied

Region	CO	NO ₂	O ₃	SO ₂	PM ₁₀	Pb
Port Phillip	B	–	–	B	–	B
Latrobe Valley	A	–	–	–	–	A
Ballarat	A	A	–	F	–	F
Bendigo	A	A	E&F	F	–	F
Mildura	F	F	E&F	F	–	F
Shepparton	F	F	E&F	F	–	F
Warrnambool	F	F	E	F	–	F
Wodonga	F	F	E&F	F	–	F

Details of screening arguments are given in the monitoring plan and previous annual reports.

At Warrnambool in 2006–07, maximum one-hour and four-hour O₃ averages were 0.065 ppm and 0.063 ppm. These do not satisfy screening criteria.

Ozone levels above the screening limits occurred on bushfire days and therefore the monitoring period may be considered atypical. Warrnambool satisfies screening using generic modelling as provided for in Procedure E of the screening technical paper. Maximum levels were well below the standards even when influenced by bushfires and are reasonably expected to be consistently below the relevant standards.

Warrnambool's maximum 24-hour average PM₁₀ was 48.6 µg/m³. This is not low enough to satisfy the screening procedures.

Regional campaign monitoring continues to record elevated concentrations of PM₁₀ that do not meet screening criteria. This issue will be considered further in the next review of the monitoring plan.

PM_{2.5} monitoring

In 2003 the NEPM was varied to include advisory reporting standards for PM_{2.5}. Victoria monitors PM_{2.5} by the reference method specified in the NEPM (on a one-day-in-three basis) at two stations (Alphington and Footscray).

Victoria also participates in the PM_{2.5} Equivalence Program, with TEOM monitors located at Alphington and Footscray. Alphington was substituted for Mooroolbark, which was originally proposed in Schedule 5 of the NEPM. TEOM PM_{2.5} readings are taken with the inbuilt adjustment for PM₁₀ removed (A and B constants set to 0 and 1) and no adjustment for loss of volatiles.⁷

⁶ National Environment Protection (Ambient Air Quality) Measure Technical Paper No. 4, *Screening Procedures* (Revision 1, 2007), available from www.ephc.gov.au.

⁷ *National Environment Protection (Ambient Air Quality) Measure Technical Paper on Monitoring for PM_{2.5}*, available from www.ephc.gov.au.

B. ASSESSMENT OF COMPLIANCE WITH STANDARDS AND GOAL

Air quality is assessed against the AAQ NEPM standards and goal as shown in Table 5.

- **Standards** are concentrations, in parts per million (ppm) or micrograms per cubic metre ($\mu\text{g}/\text{m}^3$), against which air quality can be assessed.
- The **goal** of the AAQ NEPM is to achieve the National Environment Protection Standards as assessed in accordance with the monitoring protocol within ten years from commencement (that is, by 2008) to the extent specified in Schedule 2 of the AAQ NEPM. The extent is expressed as a maximum allowable number of exceedences for each standard (shown in column four of Table 5). The goal guides the formulation of strategies for the management of human activities that may affect air quality.

The number of allowable exceedences associated with the standards has been set to account for unusual meteorological conditions and, in the case of particles, natural events such as bushfires and dust storms that cannot be controlled through normal air quality management strategies.

Air quality monitoring data from each monitoring site is assessed against these standards and the associated goal.

The AAQ NEPM also specifies advisory reporting standards for $\text{PM}_{2.5}$, with a daily ($25 \mu\text{g}/\text{m}^3$) and annual ($8 \mu\text{g}/\text{m}^3$) standard. The goal for $\text{PM}_{2.5}$ is to collect sufficient data to facilitate a review of the $\text{PM}_{2.5}$ standards (this review commenced in 2005).

The following tables summarise compliance with the standards and goal of the AAQ NEPM.

Air quality is assessed as complying with the NEPM if the number of exceedences of the standard is no more than the number specified in Schedule 2 of the AAQ NEPM and data availability was at least 75 per cent in each quarter of the year. Regions also meet the standards and goal if they do not require monitoring on the basis that screening shows pollutant levels are reasonably expected to be consistently below the relevant standards.

Air quality is assessed as 'not demonstrated' if there has been insufficient data collected to demonstrate that the standards and goal have been met or not met. This occurred at Warrnambool, which operated for a 12-month period spanning two calendar years (so it was not possible to assess compliance in any one calendar year). A compliance assessment, however, has been made over the life of the Warrnambool campaign.

Regions may also be assessed as 'not demonstrated' if screening has not been completed. Performance against all standards is assessed as 'not demonstrated' at RMIT, where there was no monitoring during 2007.

Table 5: AAQ NEPM air quality standards and goal

Pollutant	Averaging period	Standard	2008 goal maximum allowable exceedences
Carbon monoxide	8 hours	9.0 ppm	1 day a year
Nitrogen dioxide	1 hour	0.12 ppm	1 day a year
	1 year	0.03 ppm	None
Ozone	1 hour	0.10 ppm	1 day a year
	4 hours	0.08 ppm	1 day a year
Sulfur dioxide	1 hour	0.20 ppm	1 day a year
	1 day	0.08 ppm	1 day a year
	1 year	0.02 ppm	none
Particles as PM_{10}	1 day	$50 \mu\text{g}/\text{m}^3$	5 days a year
Lead	1 year	$0.50 \mu\text{g}/\text{m}^3$	none
Particles as $\text{PM}_{2.5}$	1 day	$25 \mu\text{g}/\text{m}^3$	Not applicable
	1 year	$8 \mu\text{g}/\text{m}^3$	Not applicable

Carbon monoxide

Table 6: 2007 compliance summary for carbon monoxide in Victoria

AAQ NEPM standard: 9.0 ppm (8-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Region Performance monitoring station	Data availability rates (% of hours)					Number of exceedences (days)	Performance against the standard and goal
	Q1	Q2	Q3	Q4	Annual		
Port Phillip							
Alphington	94.9	94.2	94.6	95.1	94.7	0	met
Geelong South	95.2	94.3	94.9	93.8	94.6	0	met
Richmond	94.2	93.4	94.2	89.4	92.8	0	met

Regions that do not require monitoring on the basis that screening shows pollutant levels are reasonably expected to be consistently below the relevant AAQ NEPM standard: Latrobe Valley, Ballarat, Bendigo, Shepparton, Warrnambool, Wodonga, Mildura.

During 2007, the carbon monoxide standard was not exceeded at any station and compliance was demonstrated at all stations.

Nitrogen dioxide

Table 7: 2007 compliance summary for nitrogen dioxide in Victoria

AAQ NEPM standards: 0.12 ppm (1-hour average); 0.03 ppm (1-year average)

AAQ NEPM 2008 Goal: 1-hour standard exceeded on no more than 1 day per year

Region Performance monitoring station	Data availability rates (% of hours)					Number of exceedences (days)	Annual mean (ppm)	Performance against the standards and goal	
	Q1	Q2	Q3	Q4	Annual			1-hour	1-year
Port Phillip									
Alphington	94.9	94.0	94.6	95.1	94.7	0	0.011	met	met
Brighton	94.5	94.8	94.2	95.2	94.7	0	0.009	met	met
Footscray	94.8	94.9	94.7	94.8	94.8	0	0.012	met	met
Geelong South	95.2	94.3	94.9	94.9	94.8	0	0.006	met	met
Point Cook	92.0	94.8	94.8	89.7	92.8	0	0.004	met	met
Latrobe Valley									
Moe	95.4	94.0	92.5	95.6	94.4	0	0.007	met	met
Traralgon	95.5	90.4	95.4	95.0	94.1	0	0.006	met	met

Regions which do not require monitoring on the basis of screening arguments that pollutant levels are reasonably expected to be consistently below the relevant AAQ NEPM standard: Ballarat, Bendigo, Shepparton, Warrnambool, Wodonga, Mildura.

During 2007, the nitrogen dioxide standards were not exceeded at any station and compliance was demonstrated at all stations.

Ozone

Table 8: 2007 compliance summary for ozone in Victoria

AAQ NEPM standards: 0.10 ppm (1-hour average); 0.08 ppm (4-hour average)

AAQ NEPM 2008 Goal: Standards exceeded on no more than 1 day per year

Region Performance monitoring station	Data availability rates (% of hours)					Number of exceedences (days)		Performance against the standards and goal	
	Q1	Q2	Q3	Q4	Annual	1-hour	4-hour	1-hour	4-hour
Port Phillip									
Alphington	94.9	94.0	94.6	91.3	93.7	1	1	Met	Met
Brighton	94.4	95.1	94.8	95.2	94.9	1	1	Met	Met
Dandenong	95.0	94.2	92.0	95.3	94.1	1	1	Met	Met
Footscray	94.9	94.9	94.7	93.9	94.6	1	1	Met	Met
Geelong South	95.2	94.3	95.0	94.9	94.9	0	0	Met	Met
Melton	93.5	95.1	88.9	66.8	86.0	0	0	ND	ND
Mooroolbark	94.2	94.2	94.7	95.0	94.5	0	0	Met	Met
Point Cook	94.4	94.8	94.9	94.4	94.6	0	1	Met	Met
Point Henry	95.1	95.4	95.2	95.3	95.3	1	1	Met	Met
Latrobe Valley									
Moe	93.6	94.1	92.5	95.6	94.0	0	1	Met	Met
Traralgon	95.6	92.8	95.3	95.6	94.8	0	1	Met	Met
Warrnambool^a	94.3	93.9	94.8	30.5	78.2	0	0	ND	ND

ND: Not demonstrated by monitoring. See comments below.

A: Campaign monitoring ceased at Warrnambool in October 2007.

During 2007, the ozone standards were exceeded on one occasion at each of five stations for the one-hour standard and eight stations for the four-hour standard. The 2008 goal for the one and four-hour levels was met at all stations with adequate data capture. Compliance was not demonstrated (ND) at two stations, due to data loss resulting from equipment failure (Melton) and limited-term campaign monitoring (Warrnambool). Compliance was demonstrated at Warrnambool between October 2006 and October 2007.

Each of the recorded exceedences occurred during known bushfire impacts, as detailed in Section C. Bushfires emit oxides of nitrogen and organic compounds, which react to form ozone during transport away from the fires.

Sulfur dioxide

Table 9: 2007 compliance summary for sulfur dioxide in Victoria

AAQ NEPM standards: 0.20 ppm (1-hour average); 0.08 ppm (24-hour average); 0.02 ppm (1-year average)

AAQ NEPM 2008 Goal: 1-hour and 24-hour standards exceeded on no more than 1 day per year

Region Performance monitoring station	Data availability rates (% of hours)					Exceedences (days)		Annual mean (ppm)	Performance against the standards and goal		
	Q1	Q2	Q3	Q4	Annual	1-hour	24-hour		1-hour	24-hour	1-year
Port Phillip											
Alphington	92.5	94.1	92.4	91.0	92.5	0	0	0.001	Met	Met	Met
AltonaNorth	91.7	88.8	87.0	90.4	89.5	0	0	0.001	Met	Met	Met
GeelongSouth	91.2	90.2	90.3	89.8	90.4	0	0	0.001	Met	Met	Met
Latrobe Valley											
Moe	95.2	94.2	92.6	95.6	94.4	0	0	0.002	Met	Met	Met
Traralgon	95.2	91.3	86.1	95.5	92.0	0	0	0.003	Met	Met	Met

Regions that do not require monitoring on the basis of screening arguments that pollutant levels are reasonably expected to be consistently below the relevant AAQ NEPM standard: Ballarat, Bendigo, Shepparton, Warrnambool, Wodonga, Mildura.

During 2007, the sulfur dioxide standards were not exceeded at any station and compliance was demonstrated at all stations. Annual mean values are close to the limits of detection.

Lead

Following the phasing out of leaded petrol, concentrations at the peak station, Collingwood, were below the level specified for discontinuing monitoring.⁸ Monitoring of lead in Melbourne ceased at the end of 2004. All other regions meet screening criteria as set out in the monitoring plan and all regions are assessed as complying with the standard and goal.

⁸ National Environment Protection (Ambient Air Quality) Measure Technical Paper No. 9, *Lead Monitoring*, available from www.ephc.gov.au.

Particles as PM₁₀

Table 10: 2007 compliance summary for PM₁₀ in Victoria

AAQ NEPM Standard: 50 µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Region Performance monitoring station	Data availability rates (% of days)					Number of exceedences (days)	Performance against the standard and goal
	Q1	Q2	Q3	Q4	Annual		
Port Phillip							
Alphington	100.0	100.0	100.0	100.0	100.0	2	Met
Brighton	98.9	100.0	100.0	100.0	99.7	1	Met
Dandenong	100.0	100.0	100.0	100.0	100.0	5	Met
Footscray	100.0	98.9	100.0	98.9	99.5	4	Met
Geelong South	100.0	95.6	100.0	100.0	98.9	14	Not met
Mooroolbark	100.0	100.0	100.0	100.0	100.0	11	Not met
Richmond	100.0	75.8	100.0	100.0	94.0	3	Met
Latrobe Valley							
Moe	96.7	93.4	72.8	100.0	90.7	13	Not met
Traralgon	100.0	85.7	100.0	100.0	96.4	5	Met
Warrnambool ^a	100.0	100.0	100.0	31.5	82.7	0	ND

Monitoring was by TEOM.

ND Not demonstrated by monitoring. See comments below.

a: Campaign monitoring ceased at Warrnambool in October 2007.

Screening arguments that PM₁₀ levels are reasonably expected to be consistently below the relevant AAQ NEPM standard have not been satisfied for other regions (i.e., Ballarat, Bendigo, Shepparton, Wodonga and Mildura). These are assessed as 'not demonstrated'.

The PM₁₀ standard was exceeded at all stations except Warrnambool. Most of these exceedences were the result of bushfire smoke (in January) or planned burning (in April), as detailed in Section C, except for Geelong South where wind blown dust or local dust was the predominant source.

The 2008 NEPM goal was not met at three stations, Geelong South, Mooroolbark and Moe. Compliance was not demonstrated at Warrnambool in 2007 as the station was a limited-term campaign monitoring site. Compliance was demonstrated at Warrnambool for the 12 months between October 2006 and October 2007.

Particles as PM_{2.5}

The NEPM was varied in 2003 to include advisory reporting standards for particles as PM_{2.5}. There is no time frame for compliance, but monitoring by the reference method and other acceptable methods is required to be reported.

Table 11 summarises Victoria's monitoring of PM_{2.5} by the reference method. Only reference method monitoring is to be used for comparisons with the advisory reporting standards. The goal is to gather sufficient data nationally to facilitate a review of the advisory reporting standards as part of the review of the NEPM that commenced in 2005.

Table 11: 2007 monitoring summary for PM_{2.5} in Victoria

AAQ NEPM advisory reporting standards: 25 µg/m³ (24-hour average); 8 µg/m³ (1-year average)

Region Performance monitoring station	Data availability rates (% of days)					Number of exceedences (days)	Annual mean (µg/m ³)
	Q1	Q2	Q3	Q4	Annual		
Port Phillip							
Alphington	100.0	83.9	100.0	96.8	95.1	3	8.0
Footscray	83.3	96.8	100.0	100.0	95.1	1	7.4

Monitoring by reference method (one-day-in-three).

Exceedences of the 24-hour reporting standard were due to bushfires, as detailed in Section C, except for one occasion at Alphington that occurred in stable conditions during the colder months. The annual mean standard was equalled at Alphington.

Table 12 summarises Victoria's monitoring of PM_{2.5} by TEOM for the Equivalence Program. TEOM PM_{2.5} data is usually lower than the reference method especially in the cooler months due to the loss of the volatile component of PM_{2.5}. Details are given in Section C.

Table 12: PM_{2.5} Equivalence Program 2007 TEOM monitoring summary

Region Performance monitoring station	Data availability rates (% of days)					Annual mean (µg/m ³)
	Q1	Q2	Q3	Q4	Annual	
Port Phillip						
Alphington	100.0	100.0	100.0	100.0	100.0	6.3
Footscray	100.0	100.0	100.0	97.8	99.5	5.3

Monitoring by TEOM (daily).

C. ANALYSIS OF AIR QUALITY MONITORING

Annual summary statistics are presented in this section. The AAQ NEPM states that the short-term standards should not be exceeded on more than one day for carbon monoxide, nitrogen dioxide, ozone and sulfur dioxide, or on more than five days per year for PM₁₀. The second highest non-overlapping daily value for the year (or the sixth for PM₁₀) can indicate the extent to which the standards are, or are not, met. Concentrations exceeding the standard are highlighted in bold.

All occasions when a standard was exceeded are listed, as are the circumstances leading to the exceedence.

Tables of monitoring statistics presented in this section have been prepared according to AAQ NEPM guidelines.⁹

Carbon monoxide

Table 13: 2007 summary statistics for daily peak eight-hour carbon monoxide in Victoria

AAQ NEPM standard: 9.0 ppm (8-hour average)
AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Region Performance monitoring station	Number of valid days	Highest (ppm)	Highest (date:hour)	2nd highest (ppm)	2nd highest (date:hour)
Port Phillip					
Alphington	360	2.8	Jul 11:01 Jul 10:24		
Geelong South	358	1.9	Jul 11:03	1.7	Jul 22:03
Richmond	355	2.9	Jul 11:01 Jul 10:24		

Carbon monoxide levels were well within the standard at all stations. The highest readings were at the inner-suburban site Richmond, where carbon monoxide reached 32 per cent of the standard.

Nitrogen dioxide

Table 14: 2007 summary statistics for daily peak one-hour nitrogen dioxide in Victoria

AAQ NEPM standard: 0.12 ppm (1-hour average)
AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Region Performance monitoring station	Number of valid days	Highest (ppm)	Highest (date:hour)	2nd highest (ppm)	2nd highest (date:hour)
Port Phillip					
Alphington	365	0.052	Apr 13:17	0.050	Nov 19:22 Jun 15:16
Brighton	364	0.048	Nov 19:22	0.041	Aug 20:13 Jun 14:10 Mar 10:24
Footscray	364	0.056	Nov 19:24	0.054	Nov 16:12
Geelong South	364	0.037	Feb 13:24	0.034	Nov 19:23
Point Cook	354	0.046	Feb 05:10	0.040	Apr 19:12 Mar 22:11 Nov 16:10
Latrobe Valley					
Moe	359	0.032	May 12:18	0.031	Jan 17:06
Traralgon	356	0.038	Apr 20:18	0.032	Jan 06:19

⁹ National Environment Protection (Ambient Air Quality) Measure Technical Paper No. 8, Annual Reports, available from www.ephc.gov.au.

Nitrogen dioxide levels were well within the standard at all stations. The highest one-hour average occurred at Footscray, and was 47 per cent of the hourly standard. The highest annual average was 40 per cent of the standard (Table 7).

Ozone

Table 15: 2007 summary statistics for daily peak one-hour ozone in Victoria

AAQ NEPM standard: 0.10 ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Region Performance monitoring station	Number of valid days	Highest (ppm)	Highest (date:hour)	2nd highest (ppm)	2nd highest (date:hour)
Port Phillip					
Alphington	361	0.121	Jan 09:15	0.077	Feb 21:15
Brighton	364	0.122	Jan 09:15	0.082	Nov 19:15
Dandenong	360	0.112	Jan 09:16	0.078	Nov 19:14
Footscray	362	0.127	Jan 09:16	0.075	Nov 19:15
Geelong South	364	0.088	Jan 16:13	0.082	Nov 19:14
Melton	327	0.085	Jan 09:16	0.080	Feb 02:16
Mooroolbark	364	0.084	Feb 20:14	0.082	Jan 15:16
Point Cook	363	0.095	Jan 09:16	0.076	Feb 15:15
					Nov 16:15
Point Henry	364	0.101	Jan 16:14	0.078	Nov 19:15
Latrobe Valley					
Moe	357	0.099	Jan 10:15	0.093	Jan 16:18
Traralgon	362	0.094	Jan 10:13	0.082	Jan 16:13
Warrnambool^a	300	0.060	Jan 16:20	0.056	Jan 02:20

a Campaign monitoring ceased at Warrnambool in October 2007.

Table 16: 2007 summary statistics for daily peak four-hour ozone in Victoria

AAQ NEPM standard: 0.08 ppm (4-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Region Performance monitoring station	Number of valid days	Highest (ppm)	Highest (date:hour)	2nd highest (ppm)	2nd highest (date:hour)
Port Phillip					
Alphington	360	0.115	Jan 09:17	0.070	Feb 02:17
Brighton	364	0.111	Jan 09:16	0.079	Nov 19:17
Dandenong	360	0.106	Jan 09:17	0.073	Dec 31:18
					Nov 19:16
Footscray	361	0.113	Jan 09:17	0.072	Dec 31:16
Geelong South	364	0.076	Jan 16:16	0.073	Nov 19:16
Melton	328	0.080	Jan 09:18	0.075	Nov 19:18
Mooroolbark	363	0.077	Feb 20:17	0.074	Jan 15:17
Point Cook	363	0.086	Jan 09:17	0.072	Nov 19:17
Point Henry	364	0.085	Jan 16:16	0.065	Nov 19:16
Latrobe Valley					
Moe	357	0.089	Jan 10:15	0.075	Jan 16:15
Traralgon	362	0.082	Jan 10:15	0.077	Jan 16:15
Warrnambool^a	300	0.054	Jan 16:21	0.049	Jan 02:21

a: Campaign monitoring ceased at Warrnambool in October 2007.

Ozone is generated by chemical reactions in strong sunlight as precursor chemicals are transported from the point of emission. Ozone events in Melbourne typically occur when air masses are recirculated back into the metropolitan area. Compared to their respective standards, the four-hour averages are usually proportionally higher than one-hour averages, leading to more exceedences of the four-hour standard.

The recorded exceedences of the one-hour and four-hour standards are shown in Table 17. All exceedences occurred on days when visible smoke from bushfires indicated that ozone would have been formed from oxides of nitrogen and reactive hydrocarbons emitted by the fires. The goals for ozone were met at all stations (Table 8).

Table 17: 2007 ozone exceedences

AAQ NEPM standards: 0.10ppm (1-hour average), 0.08ppm (4-hour average)

AAQ NEPM 2008 Goal: Standards exceeded on no more than 1 day per year

Date	Port Phillip						Latrobe Valley		Inferred cause
Averaging period	Alphington	Brighton	Dandenong	Footscray	Point Cook	Point Henry	Moe	Traralgon	
09Jan07									Bushfire
1h ave	0.121	0.122	0.112	0.127					
4h ave	0.115	0.111	0.106	0.113	0.086				
10Jan07									Bushfire
1h ave									
4h ave							0.089	0.082	
16Jan07									Bushfire
1h ave							0.101		
4h ave							0.085		

All readings in ppm.

Sulfur dioxide

Table 18: 2007 summary statistics for daily peak one-hour sulfur dioxide in Victoria

AAQ NEPM standard: 0.20 ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Region Performance monitoring station	Number of valid days	Highest (ppm)	Highest (date:hour)	2nd highest (ppm)	2nd highest (date:hour)
Port Phillip					
Alphington	363	0.022	May 07:15	0.011	Mar 05:05
Altona North	355	0.039	Mar 30:20	0.037	Dec 09:22
Geelong South	361	0.083	Feb 02:10	0.067	Nov 18:23
Lalrobo Valley					
Moe	361	0.066	Oct 17:14	0.048	Nov 13:13
Traralgon	351	0.092	Jan 23:12	0.088	Oct 24:15

Table 19: 2007 summary statistics for daily peak 24-hour sulfur dioxide in Victoria

AAQ NEPM standard: 0.08ppm (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Region Performance monitoring station	Number of valid days	Highest (ppm)	Highest (date)	2nd highest (ppm)	2nd highest (date)
Port Phillip					
Alphington	363	0.004	Jun 04	0.003	Aug 06 Jul 19 Jul 13 Jun 25 Jun 05 May 12 Apr 05 Mar 04
Altona North	355	0.013	Mar 30	0.011	Dec 09 Oct 16
Geelong South	361	0.009	Feb 02	0.007	Nov 18
Lalrobo Valley					
Moe	359	0.010	Oct 17	0.007	Nov 13 Sep 22 Mar 14
Traralgon	349	0.011	Jun 30	0.010	Oct 24 Apr 01

Sulfur dioxide levels were well within the standards at all stations. One-hour averages are higher relative to the standard than 24-hour or annual averages. The highest one-hour reading occurred in the Lalrobo Valley and was 46 per cent of the one-hour standard. The highest 24-hour average was recorded at Altona North and was 16 per cent of the 24-hour standard. Annual averages at all stations (Table 9) are close to the limit of detection.

Particles as PM₁₀

Table 20: 2007 summary statistics for 24-hour PM₁₀ in Victoria

AAQ NEPM standard: 50 µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Region Performance monitoring station	Number of valid days	Highest (µg/m ³)	Highest (date)	6th highest (µg/m ³)	6th highest (date)
Port Phillip					
Alphington	365	83.1	Jan 09	41.0	Oct 28
Brighton	364	78.4	Jan 09	34.8	Apr 14
Dandenong	365	84.6	Jan 09	48.5	Jan 16
Footscray	363	65.9	Jan 09	46.5	Mar 23
Geelong South	361	129.1	Mar 23	62.9	Aug 31
Mooroolbark	365	136.1	Jan 10	59.4	Jan 16
Richmond	343	78.7	Jan 09	37.6	Sep 18
Latrobe Valley					
Moe	331	137.2	Jan 10	64.3	Feb 21
Traralgon	352	151.2	Jan 10	49.1	Apr 14
Warrnambool^a	302	48.6	Mar 22	38.7	Mar 15

a Campaign monitoring ceased at Warrnambool in October 2007.

In addition to TEOM monitoring, PM₁₀ was monitored by high-volume sampler one day in six at Alphington and Footscray, throughout the year. The highest high-volume sampler readings were 45.5 and 44.6 µg/m³, respectively.

In 2007, PM₁₀ exceedences occurred on the days listed in Table 21. The likely causes have been inferred, with the majority of exceedences attributed to fire smoke and windborne dust. Bushfires in January and planned burning in April 2007 impacted regions throughout Victoria. Windborne dust was predominantly an issue at Geelong South. Some of these dust events were due to localised influences, such as the agricultural show at Geelong (19–21 October). The standard was also exceeded in stable atmospheric conditions with low winds, which allow combustion particle emissions to accumulate, especially in colder weather.

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Table 21: 2007 PM₁₀ exceedences

AAQ NEPM standard: 50µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Date	Port Phillip							Latrobe Valley		Inferred cause ^a
	Alphington	Brighton	Dandenong	Footscray	Geelong South	Mooroolbark	Richmond	Moe	Traralgon	
06Jan								51.7	72.8	Fire
09Jan	83.1	78.4	84.6	65.9	58.4	95.7	78.7			Fire
10Jan	51.6		64.3		52.2	136.1	57.0	137.2	151.2	Fire
11Jan								60.3		Fire
16Jan				53.3	64.5	59.4		66.0	66.6	Fire
17Jan			52.6		60.8	62.1	54.2	53.1		Fire
31Jan					58.9					Dust
01Feb								73.1		Unknown
02Feb					60.2					Dust
05Feb					58.2					Dust
07Feb								51.0		Urban
09Feb								86.6		Urban
21Feb								64.3		Urban
03Mar						55.8				Urban
06Mar								128.5		Dust
07Mar					53.2					Dust
15Mar						51.5				Urban
23Mar					129.1					Dust
10Apr						64.6				Fire
13Apr			56.2			51.7				Fire
14Apr						65.2				Fire
19Apr						50.1				Fire
20Apr								53.7	50.8	Fire
21Apr								50.9		Fire
12May									53.2	Urban
06Jun						50.3				Urban
10Jul			52.2							Urban
30Aug					54.0					Dust
31Aug				51.0	62.9					Dust
03Oct				50.5						Dust
19Oct					66.2					Dust
20Oct					100.6					Dust
21Oct					77.8					Dust
26Oct								52.3		Urban
Total	2	1	5	4	14	11	3	13	5	

All readings in µg/m³.

- a
- Dust = windborne crustal dust, often from distant sources.
 - Fire = smoke from bushfires or planned burning or agricultural burning.
 - Urban = particles accumulating in stable atmospheric conditions, typically from motor vehicles or domestic wood heaters.

Particles as PM_{2.5}

Table 22: 2007 summary statistics for 24-hour PM_{2.5} in Victoria

AAQ NEPM advisory reporting standard: 25 µg/m³ (24-hour ave)

Region Performance monitoring station	Number of valid days	Highest (µg/m ³)	Highest (date)
Port Phillip			
Alphington	116	36.0	Jan 10
Footscray	116	33.1	Jan 01

Monitoring by reference method (one-day-in-three).

The 24-hour reporting standard for PM_{2.5} was exceeded at both stations due to bushfire smoke and the annual reporting standard was equalled at Alphington (Table 11).

Results of PM_{2.5} monitoring by TEOM (Table 23) are not adjusted for loss of volatiles. The highest readings occurred on a bushfire day when the reference monitors were not scheduled to operate.

Table 23: PM_{2.5} Equivalence Program 2007 TEOM monitoring – daily statistics

Region Performance monitoring station	Number of valid days	Highest (µg/m ³)	Highest (date)
Port Phillip			
Alphington	365	59.4	Jan 09
Footscray	363	42.9	Jan 09

Bushfires led to two days with exceedences of the 24-hour PM_{2.5} reporting standard (Table 24). Alphington had an additional exceedence when poor dispersion conditions caused the accumulation of pollution.

Table 24: 2007 PM_{2.5} exceedences

AAQ NEPM standard: 25 µg/m³ (24-hour average)

Date	Port Phillip		Inferred cause ^a
	Alphington	Footscray	
01Jan	31.7	33.1	Fire
10Jan	36.0		Fire
21Jun	25.2		Urban

All readings in µg/m³. Measured by reference method.

- a Fire = smoke from bushfires or planned burning.
Urban = particles accumulating in stable atmospheric conditions, typically from vehicle traffic or domestic wood heaters.

Summary of progress towards achieving the AAQ NEPM 2008 goal

Compliance

The AAQ NEPM goal for carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, lead and PM₁₀ is to achieve the standards, to the extent specified by the number of allowed exceedences, by 2008. In 2007, at all stations where there was sufficient data capture to make the assessment, the 2008 goal was met, except for PM₁₀.

Bushfires, planned burns and wind-blown dust resulted in the 2008 goal not being achieved for PM₁₀ at Geelong South, Mooroolbark and Moe.

The AAQ NEPM goal for PM_{2.5} is to gather sufficient data to facilitate a review of the advisory reporting standards as part of the review of the NEPM. PM_{2.5} has been monitored at two stations (Alphington and Footscray) in the Port Phillip region.

Data capture

Compliance with the standards and goal can only be demonstrated if data capture is at least 75 per cent in each quarter of the year.¹⁰ In 2007 this requirement was achieved for all pollutants at all stations that operated continuously throughout the year, except where instrument malfunctions caused loss of data for ozone at Melton and PM₁₀ at Moe for one quarter. Stations that did not operate continuously throughout the year were:

- RMIT – monitoring ceased in 2006 as the site lease was terminated
- Warrnambool – a campaign station that was planned to operate for only part of the year. Monitoring from October 2006 to October 2007 demonstrated compliance with the ozone and PM₁₀ goals.

Screening

In addition to screening in the monitoring plan, procedures have been invoked for screening carbon monoxide and nitrogen dioxide in the six rural regions and ozone in five of the six. Screening has not demonstrated that PM₁₀ levels are expected to be consistently below the standard in the six rural regions. Regions which do not require monitoring on the basis of screening procedures are listed below the compliance summary tables (Tables 6 to 10).

Compliance in regions where screening criteria have not been met is reported as 'not demonstrated'.

¹⁰ National Environment Protection (Ambient Air Quality) Measure Technical paper No. 8, Annual Reports, available from www.ephc.gov.au.

D. DATA ANALYSIS

Results of further analysis of the monitoring data are presented in this section. In these tables daily peak values are formed only when at least 75 per cent of the data for the day are valid. Data for stations with less than 15 per cent data availability are omitted and stations with less than 75 per cent data availability are shown in italics. Exceedences are shown in bold. The percentiles for eight-hour carbon monoxide and four-hour ozone are based on running averages, including those that overlap from one day to the next.

Percentiles of 2007 daily peak concentrations are presented for each station and standard. Annual statistics are also presented for stations with at least five years of data. Trends at different stations and for different statistics have different statistical significance and in most cases there is no obvious overall trend over the periods shown, in spite of increasing population pressures.

Lead is an exception, where annual averages have decreased markedly, so that monitoring is no longer necessary. Carbon monoxide has also decreased over the period.

Carbon monoxide

Table 25: 2007 percentiles of daily peak eight-hour carbon monoxide concentrations in Victoria

AAQ NEPM standard: 9.0ppm (8-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Region	Data availability (% of days)	Max (ppm)	Percentiles (ppm)					
Performance monitoring station			99th	98th	95th	90th	75th	50th
Port Phillip								
Alphington	98.6	2.8	2.3	1.9	1.6	1.2	0.8	0.5
Geelong South	98.1	1.9	1.3	1.1	0.7	0.6	0.4	0.2
Richmond	97.3	2.9	2.3	1.9	1.5	1.0	0.5	0.3

Table 26: Percentiles of daily maximum eight-hour carbon monoxide at Alphington (1995–2007)

AAQ NEPM standard: 9.0 ppm (8-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	92.1	0	6.0	4.9	4.5	3.4	2.5	1.5	0.8
1996	98.6	0	6.5	5.8	5.0	3.3	2.5	1.6	0.8
1997	98.9	0	6.5	5.5	4.4	3.4	2.6	1.5	0.8
1998	95.3	0	6.8	6.0	5.1	3.9	2.7	1.7	0.7
1999	55.1	0	6.2	4.7	4.1	3.0	2.1	1.1	0.6
2000	96.7	0	5.0	4.5	4.3	3.1	2.4	1.2	0.6
2001	92.9	0	5.2	3.8	3.4	2.9	2.0	1.1	0.6
2002	93.7	0	3.8	3.5	3.1	2.7	2.0	0.9	0.4
2003	96.7	0	5.4	3.9	3.5	2.7	1.8	0.9	0.5
2004	97.0	0	3.7	2.4	2.3	1.7	1.3	0.8	0.5
2005	93.7	0	3.1	2.5	2.4	2.0	1.6	0.9	0.6
2006	89.6	0	3.6	3.2	3.0	2.5	1.9	1.0	0.6
2007	98.6	0	2.8	2.3	1.9	1.6	1.2	0.8	0.5

Years with data availability below 75 per cent shown in italics.

Table 27: Percentiles of daily maximum eight-hour carbon monoxide at Geelong South (1995–2007)

AAQ NEPM standard: 9.0ppm (8-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	80.5	0	4.2	3.2	2.9	2.4	1.6	0.8	0.4
1996	86.3	0	4.3	3.3	2.9	1.9	1.2	0.5	0.3
1997	<i>0.0</i>								
1998	66.0	0	3.3	2.8	2.6	2.3	1.6	0.7	0.4
1999	92.6	0	3.0	2.7	2.3	1.6	1.1	0.7	0.3
2000	85.8	0	2.7	2.1	1.9	1.4	1.0	0.5	0.3
2001	87.7	0	2.2	1.9	1.6	1.2	0.9	0.5	0.2
2002	87.1	0	2.3	1.8	1.4	1.0	0.6	0.3	0.1
2003	87.1	0	3.2	1.8	1.6	1.1	0.7	0.4	0.2
2004	85.8	0	2.6	1.7	1.6	0.9	0.6	0.4	0.1
2005	96.4	0	3.5	1.8	1.5	0.9	0.7	0.2	0.1
2006	92.3	0	2.2	1.9	1.6	1.2	0.7	0.3	0.1
2007	98.1	0	1.9	1.3	1.1	0.7	0.6	0.4	0.2

Years with data availability below 75 per cent shown in italics.

Table 28: Percentiles of daily maximum eight-hour carbon monoxide at Richmond (2001–07)

AAQ NEPM standard: 9.0ppm (8-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
2001	89.3	0	4.0	3.4	3.1	2.7	2.0	1.1	0.5
2002	93.2	0	5.0	3.1	2.8	2.4	1.9	0.8	0.3
2003	96.4	0	6.4	4.0	3.6	2.6	1.7	0.8	0.3
2004	96.2	0	3.9	2.4	2.2	1.8	1.2	0.6	0.3
2005	96.2	0	3.8	3.1	2.8	2.2	1.5	0.6	0.2
2006	95.3	0	3.2	2.9	2.8	2.3	1.7	0.7	0.3
2007	97.3	0	2.9	2.3	1.9	1.5	1.0	0.5	0.3

Table 29: Percentiles of daily maximum eight-hour carbon monoxide at RMIT (CBD) (1995–2006)

AAQ NEPM standard: 9.0ppm (8-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
<i>1995</i>	<i>2.7</i>								
1996	90.4	0	5.5	4.5	3.8	2.8	2.2	1.6	0.9
1997	98.4	0	5.5	4.3	3.8	2.9	2.4	1.4	0.9
1998	86.3	0	5.9	4.7	4.4	3.0	2.1	1.4	0.8
<i>1999</i>	<i>35.6</i>	<i>0</i>	<i>5.9</i>	<i>5.0</i>	<i>3.3</i>	<i>2.7</i>	<i>2.0</i>	<i>1.5</i>	<i>1.2</i>
2000	96.4	0	5.0	3.4	3.2	2.5	1.8	1.1	0.8
2001	88.8	0	3.6	2.7	2.4	2.1	1.7	1.1	0.7
2002	85.2	0	3.2	2.9	2.7	1.8	1.5	0.9	0.5
2003	96.7	0	3.9	3.0	2.6	1.8	1.5	0.9	0.6
2004	91.5	0	2.1	1.9	1.8	1.5	1.2	0.8	0.6
2005	95.3	0	2.3	2.1	1.9	1.7	1.3	0.9	0.6
2006	77.0	0	2.9	2.5	2.0	1.7	1.5	1.0	0.6

Years with data availability below 75 per cent shown in italics.

Nitrogen dioxide

Table 30: 2007 percentiles of daily peak one-hour nitrogen dioxide concentrations in Victoria

AAQ NEPM standard: 0.12ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Region	Data availability	Max	Percentiles (ppm)					
Performance monitoring station	(% of days)	(ppm)	99th	98th	95th	90th	75th	50th
Port Phillip								
Alphington	100.0	0.052	0.046	0.039	0.035	0.033	0.029	0.024
Brighton	99.7	0.048	0.040	0.038	0.034	0.032	0.026	0.020
Footscray	99.7	0.056	0.050	0.045	0.038	0.035	0.030	0.025
Geelong South	99.7	0.037	0.032	0.030	0.028	0.026	0.022	0.015
Point Cook	97.0	0.046	0.038	0.034	0.029	0.025	0.020	0.013
Latrobe Valley								
Moe	98.4	0.032	0.028	0.027	0.024	0.022	0.019	0.014
Traralgon	97.5	0.032 ^a	0.029	0.027	0.026	0.024	0.019	0.015

^a The highest daily maximum at Traralgon is different from the highest hour reported in Table 14 as there were insufficient hours of data on 20 April to form a valid daily maximum.

Table 31: Percentiles of daily maximum one-hour nitrogen dioxide at Alphington (1995–2007)

AAQ NEPM standard: 0.12ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	72.6	0	0.051	0.046	0.043	0.039	0.035	0.030	0.025
1996	93.7	0	0.061	0.046	0.043	0.038	0.034	0.029	0.024
1997	84.4	0	0.075	0.059	0.051	0.044	0.038	0.030	0.025
1998	95.9	0	0.073	0.058	0.055	0.045	0.039	0.031	0.026
1999	97.5	0	0.065	0.046	0.045	0.038	0.035	0.029	0.025
2000	89.0	0	0.069	0.053	0.048	0.040	0.035	0.029	0.024
2001	90.4	0	0.060	0.052	0.047	0.039	0.034	0.029	0.024
2002	93.7	0	0.060	0.048	0.046	0.038	0.034	0.030	0.023
2003	90.1	0	0.065	0.050	0.046	0.037	0.032	0.027	0.023
2004	95.6	0	0.056	0.044	0.039	0.034	0.032	0.028	0.023
2005	94.8	0	0.050	0.043	0.039	0.035	0.033	0.027	0.022
2006	90.7	0	0.069	0.044	0.042	0.038	0.034	0.030	0.024
2007	100.0	0	0.052	0.046	0.039	0.035	0.033	0.029	0.024

Years with data availability below 75 per cent shown in italics.

Table 32: Percentiles of daily maximum one-hour nitrogen dioxide at Brighton (1995–2007)

AAQ NEPM standard: 0.12ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	85.2	0	0.060	0.049	0.042	0.038	0.034	0.028	0.022
1996	82.8	0	0.056	0.044	0.044	0.038	0.034	0.028	0.022
1997	84.4	0	0.075	0.059	0.051	0.044	0.038	0.030	0.025
1998	95.9	0	0.073	0.058	0.055	0.045	0.039	0.031	0.026
1999	97.5	0	0.065	0.046	0.045	0.038	0.035	0.029	0.025
2000	89.0	0	0.069	0.053	0.048	0.040	0.035	0.029	0.024
2001	90.4	0	0.060	0.052	0.047	0.039	0.034	0.029	0.024
2002	93.7	0	0.060	0.048	0.046	0.038	0.034	0.030	0.023
2003	90.1	0	0.065	0.050	0.046	0.037	0.032	0.027	0.023
2004	95.6	0	0.056	0.044	0.039	0.034	0.032	0.028	0.023
2005	94.8	0	0.050	0.043	0.039	0.035	0.033	0.027	0.022
2006	90.7	0	0.069	0.044	0.042	0.038	0.034	0.030	0.024
2007	99.7	0	0.048	0.040	0.038	0.034	0.032	0.026	0.020

Table 33: Percentiles of daily maximum one-hour nitrogen dioxide at Footscray (1995–2007)

AAQ NEPM standard: 0.12 ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	87.1	0	0.056	0.051	0.048	0.043	0.038	0.031	0.024
1996	91.5	0	0.071	0.054	0.049	0.043	0.037	0.028	0.023
1997	98.1	0	0.088	0.066	0.058	0.048	0.040	0.032	0.026
1998	89.9	0	0.070	0.057	0.053	0.048	0.042	0.032	0.024
1999	97.8	0	0.081	0.057	0.051	0.045	0.040	0.033	0.026
2000	82.7	0	0.070	0.060	0.054	0.046	0.039	0.030	0.025
2001	32.6	0	0.041	0.040	0.039	0.036	0.033	0.028	0.021
2002	91.8	0	0.059	0.055	0.049	0.040	0.035	0.029	0.022
2003	97.8	0	0.065	0.058	0.054	0.044	0.037	0.029	0.022
2004	95.6	0	0.056	0.047	0.044	0.040	0.035	0.029	0.023
2005	99.5	0	0.053	0.046	0.043	0.038	0.034	0.027	0.021
2006	87.7	0	0.071	0.051	0.046	0.040	0.034	0.028	0.022
2007	99.7	0	0.056	0.050	0.045	0.038	0.035	0.030	0.025

Years with data availability below 75 per cent shown in italics.

Table 34: Percentiles of daily maximum one-hour nitrogen dioxide at Geelong South (1995–2007)

AAQ NEPM standard: 0.12ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	68.8	0	0.048	0.039	0.038	0.034	0.031	0.025	0.021
1996	86.6	0	0.044	0.041	0.038	0.033	0.028	0.024	0.018
1997	0								
1998	68.5	0	0.067	0.039	0.037	0.034	0.032	0.026	0.020
1999	93.7	0	0.046	0.038	0.035	0.031	0.028	0.022	0.016
2000	85.2	0	0.048	0.038	0.037	0.028	0.024	0.019	0.015
2001	91.2	0	0.047	0.035	0.032	0.029	0.027	0.022	0.015
2002	94.2	0	0.056	0.036	0.031	0.027	0.025	0.019	0.012
2003	87.7	0	0.050	0.034	0.033	0.028	0.025	0.021	0.014
2004	93.2	0	0.050	0.037	0.030	0.027	0.024	0.020	0.015
2005	98.1	0	0.048	0.038	0.034	0.029	0.026	0.021	0.015
2006	92.9	0	0.043	0.036	0.034	0.028	0.026	0.022	0.016
2007	99.7	0	0.037	0.032	0.030	0.028	0.026	0.022	0.015

Years with data availability below 75 per cent shown in italics.

Table 35: Percentiles of daily maximum one-hour nitrogen dioxide at Point Cook (1995–2007)

AAQ NEPM standard: 0.12ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	83.6	0	0.048	0.041	0.038	0.032	0.028	0.020	0.014
1996	91.5	0	0.054	0.046	0.045	0.038	0.029	0.023	0.015
1997	<i>0</i>								
1998	92.1	0	0.064	0.049	0.046	0.036	0.028	0.022	0.015
1999	84.4	0	0.044	0.037	0.036	0.032	0.028	0.018	0.011
2000	68.8	0	0.048	0.043	0.039	0.032	0.028	0.020	0.014
2001	87.7	0	0.054	0.044	0.040	0.033	0.029	0.022	0.015
2002	96.2	0	0.056	0.045	0.041	0.031	0.027	0.021	0.013
2003	93.2	0	0.064	0.048	0.044	0.031	0.028	0.020	0.013
2004	94.8	0	0.066	0.041	0.035	0.030	0.026	0.020	0.013
2005	96.7	0	0.043	0.039	0.037	0.032	0.027	0.021	0.014
2006	89.6	0	0.049	0.047	0.043	0.033	0.028	0.022	0.014
2007	97.0	0	0.046	0.038	0.034	0.029	0.025	0.020	0.013

Years with data availability below 75 per cent shown in italics.

Table 36: Percentiles of daily maximum one-hour nitrogen dioxide at RMIT (CBD) (1996–2006)

AAQ NEPM standard: 0.12ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1996	92.1	0	0.085	0.059	0.052	0.045	0.040	0.032	0.027
1997	90.4	0	0.100	0.074	0.065	0.055	0.046	0.039	0.032
1998	83.8	0	0.089	0.067	0.057	0.049	0.046	0.036	0.028
1999	97.3	0	0.078	0.062	0.050	0.045	0.041	0.033	0.028
2000	91.5	0	0.090	0.064	0.058	0.049	0.041	0.032	0.026
2001	93.4	0	0.071	0.055	0.050	0.043	0.036	0.029	0.024
2002	94.2	0	0.079	0.053	0.046	0.039	0.035	0.028	0.023
2003	98.9	0	0.069	0.059	0.053	0.045	0.039	0.032	0.026
2004	93.7	0	0.075	0.049	0.046	0.040	0.037	0.031	0.026
2005	98.1	0	0.058	0.050	0.047	0.041	0.037	0.032	0.027
2006	78.9	0	0.056	0.051	0.048	0.044	0.040	0.033	0.028

Table 37: Percentiles of daily maximum one-hour nitrogen dioxide at Moe (1995–2007)

AAQ NEPM standard: 0.12ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	74.8	0	0.031	0.028	0.026	0.024	0.022	0.018	0.014
1996	26.8	0	0.027	0.021	0.018	0.016	0.013	0.012	0.009
1997	69.6	0	0.036	0.031	0.031	0.026	0.023	0.020	0.016
1998	87.9	0	0.049	0.036	0.033	0.029	0.026	0.022	0.016
1999	86.0	0	0.049	0.035	0.032	0.028	0.025	0.022	0.017
2000	73.5	0	0.050	0.040	0.036	0.027	0.024	0.020	0.015
2001	95.1	0	0.036	0.028	0.026	0.024	0.022	0.018	0.014
2002	96.7	0	0.036	0.030	0.029	0.027	0.026	0.021	0.014
2003	98.4	0	0.034	0.031	0.029	0.027	0.024	0.020	0.014
2004	100.0	0	0.032	0.026	0.024	0.023	0.021	0.018	0.014
2005	99.5	0	0.039	0.034	0.032	0.027	0.024	0.019	0.014
2006	81.1	0	0.058	0.030	0.029	0.026	0.024	0.020	0.016
2007	98.4	0	0.032	0.028	0.027	0.024	0.022	0.019	0.014

Years with data availability below 75 per cent shown in italics.

Table 38: Percentiles of daily maximum one-hour nitrogen dioxide at Traralgon (1995–2007)

AAQ NEPM standard: 0.12ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	94.0	0	0.040	0.029	0.028	0.027	0.024	0.021	0.016
1996	85.8	0	0.035	0.032	0.029	0.027	0.025	0.022	0.016
1997	64.7	0	0.038	0.037	0.034	0.031	0.028	0.024	0.018
1998	89.0	0	0.036	0.030	0.029	0.027	0.025	0.022	0.016
1999	80.8	0	0.042	0.034	0.031	0.028	0.027	0.023	0.018
2000	98.4	0	0.041	0.037	0.033	0.027	0.025	0.021	0.017
2001	98.9	0	0.033	0.031	0.026	0.024	0.022	0.019	0.015
2002	98.1	0	0.033	0.031	0.030	0.027	0.025	0.020	0.015
2003	99.2	0	0.053	0.032	0.030	0.028	0.026	0.022	0.016
2004	98.6	0	0.036	0.034	0.030	0.028	0.024	0.019	0.015
2005	91.5	0	0.040	0.032	0.030	0.028	0.026	0.023	0.016
2006	99.2	0	0.045	0.027	0.026	0.025	0.023	0.020	0.015
2007	97.5	0	0.032 ^a	0.029	0.027	0.026	0.024	0.019	0.015

Years with data availability below 75 per cent shown in italics.

- a The highest daily maximum at Traralgon is different from the highest hour reported in Table 14 as there were insufficient hours of data on 20 April to form a valid daily maximum.

Ozone

Table 39: 2007 percentiles of daily peak one-hour ozone concentrations in Victoria

AAQ NEPM standard: 0.10ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Region	Data availability	Max	Percentiles (ppm)					
Performance monitoring station	(% of days)	(ppm)	99th	98th	95th	90th	75th	50th
Port Phillip								
Alphington	98.9	0.121	0.072	0.067	0.060	0.048	0.034	0.029
Brighton	99.7	0.122	0.076	0.069	0.060	0.053	0.039	0.032
Dandenong	98.6	0.112	0.072	0.063	0.056	0.047	0.035	0.028
Footscray	99.2	0.127	0.067	0.063	0.057	0.049	0.035	0.029
GeelongSouth	99.7	0.088	0.068	0.063	0.053	0.045	0.035	0.030
Melton	89.6	0.085	0.076	0.071	0.064	0.054	0.037	0.032
Mooroolbark	99.7	0.084	0.076	0.072	0.057	0.051	0.038	0.031
Point Cook	99.5	0.095	0.070	0.064	0.057	0.047	0.038	0.034
Point Henry	99.7	0.101	0.062	0.059	0.048	0.041	0.030	0.027
Latrobe Valley								
Moe	97.8	0.099	0.070	0.065	0.054	0.044	0.034	0.030
Traralgon	99.2	0.094	0.067	0.061	0.052	0.041	0.031	0.027
Warrnambool	82.2	0.060	0.049	0.048	0.041	0.037	0.035	0.032

Exceedences shown in bold.

Table 40: 2007 percentiles of daily peak four-hour ozone concentrations in Victoria

AAQ NEPM standard: 0.08ppm (4-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Region	Data availability	Max	Percentiles (ppm)					
Performance monitoring station	(% of days)	(ppm)	99th	98th	95th	90th	75th	50th
Port Phillip								
Alphington	98.6	0.115	0.065	0.062	0.053	0.046	0.033	0.027
Brighton	99.7	0.111	0.068	0.063	0.054	0.049	0.036	0.031
Dandenong	98.6	0.106	0.064	0.060	0.052	0.044	0.033	0.027
Footscray	98.9	0.113	0.060	0.057	0.052	0.045	0.033	0.028
GeelongSouth	99.7	0.076	0.062	0.057	0.049	0.042	0.034	0.029
Melton	89.9	0.080	0.068	0.066	0.057	0.050	0.036	0.031
Mooroolbark	99.5	0.077	0.072	0.066	0.054	0.047	0.036	0.030
Point Cook	99.5	0.086	0.067	0.060	0.052	0.044	0.037	0.033
Point Henry	99.7	0.085	0.058	0.052	0.045	0.038	0.029	0.026
Latrobe Valley								
Moe	97.8	0.089	0.064	0.059	0.050	0.040	0.033	0.029
Traralgon	99.2	0.082	0.058	0.056	0.047	0.037	0.029	0.026
Warrnambool	82.2	0.054	0.048	0.046	0.040	0.037	0.034	0.031

Exceedences shown in bold.

Table 41: Percentiles of daily maximum one-hour ozone at Alphington (1995–2007)

AAQ NEPM standard: 0.10ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	95.9	0	0.089	0.057	0.050	0.041	0.034	0.027	0.022
1996	97.3	0	0.076	0.062	0.060	0.044	0.038	0.026	0.021
1997	91.2	0	0.099	0.076	0.069	0.050	0.036	0.026	0.020
1998	96.2	0	0.088	0.061	0.056	0.044	0.035	0.023	0.018
1999	97.8	0	0.074	0.063	0.057	0.047	0.035	0.026	0.020
2000	98.1	0	0.067	0.055	0.049	0.045	0.034	0.024	0.020
2001	92.1	0	0.077	0.054	0.051	0.042	0.036	0.026	0.021
2002	89.6	0	0.051	0.048	0.046	0.040	0.036	0.027	0.023
2003	96.4	1	0.102	0.064	0.059	0.050	0.041	0.030	0.025
2004	96.7	0	0.073	0.048	0.046	0.040	0.037	0.028	0.023
2005	92.9	0	0.077	0.058	0.051	0.045	0.039	0.031	0.026
2006	90.1	3	0.127	0.084	0.068	0.059	0.048	0.033	0.026
2007	98.9	1	0.121	0.072	0.067	0.060	0.048	0.034	0.029

Exceedences shown in bold.

Table 42: Percentiles of daily maximum one-hour ozone at Brighton (1995–2007)

AAQ NEPM standard: 0.10ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	95.1	1	0.108	0.078	0.071	0.047	0.039	0.030	0.025
1996	95.6	0	0.089	0.077	0.062	0.049	0.039	0.029	0.024
1997	95.6	3	0.112	0.082	0.072	0.056	0.039	0.028	0.024
1998	95.6	0	0.085	0.070	0.060	0.050	0.037	0.027	0.022
1999	99.5	0	0.070	0.067	0.063	0.052	0.041	0.030	0.024
2000	96.4	0	0.073	0.068	0.060	0.048	0.041	0.028	0.023
2001	80.3	0	0.078	0.071	0.058	0.049	0.039	0.029	0.024
2002	93.7	0	0.085	0.063	0.053	0.043	0.036	0.029	0.025
2003	99.2	2	0.109	0.070	0.065	0.056	0.046	0.029	0.025
2004	94.5	1	0.106	0.062	0.058	0.043	0.039	0.030	0.025
2005	97.8	0	0.088	0.067	0.053	0.047	0.040	0.032	0.028
2006	92.9	1	0.114	0.080	0.072	0.059	0.046	0.032	0.026
2007	99.7	1	0.122	0.076	0.069	0.060	0.053	0.039	0.032

Exceedences shown in bold.

Table 43: Percentiles of daily maximum one-hour ozone at Dandenong (1995–2007)

AAQ NEPM standard: 0.10ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	97.0	0	0.098	0.057	0.052	0.043	0.036	0.029	0.025
1996	94.0	0	0.075	0.063	0.055	0.047	0.038	0.028	0.023
1997	93.2	2	0.107	0.078	0.073	0.049	0.039	0.030	0.025
1998	98.9	0	0.096	0.078	0.063	0.049	0.039	0.029	0.024
1999	98.9	0	0.077	0.070	0.065	0.053	0.042	0.032	0.025
2000	63.6	0	<i>0.071</i>	<i>0.065</i>	<i>0.062</i>	<i>0.052</i>	<i>0.043</i>	<i>0.028</i>	<i>0.023</i>
2001	75.9	0	0.073	0.062	0.058	0.048	0.041	0.032	0.026
2002	84.9	0	0.078	0.064	0.054	0.047	0.040	0.032	0.027
2003	97.5	0	0.098	0.079	0.061	0.053	0.044	0.028	0.024
2004	96.4	0	0.080	0.064	0.049	0.042	0.038	0.029	0.024
2005	92.6	0	0.072	0.062	0.054	0.045	0.041	0.033	0.028
2006	98.9	1	0.108	0.067	0.065	0.057	0.046	0.033	0.027
2007	98.6	1	0.112	0.072	0.063	0.056	0.047	0.035	0.028

Exceedences shown in bold. Years with data availability below 75 per cent shown in italics.

Table 44: Percentiles of daily maximum one-hour ozone at Footscray (1995–2007)

AAQ NEPM standard: 0.10ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	95.9	0	0.091	0.063	0.058	0.043	0.037	0.029	0.025
1996	96.4	0	0.082	0.069	0.063	0.049	0.040	0.028	0.025
1997	98.1	1	0.105	0.090	0.073	0.055	0.042	0.030	0.025
1998	94.2	1	0.113	0.064	0.059	0.048	0.038	0.028	0.023
1999	95.9	0	0.079	0.070	0.066	0.054	0.041	0.032	0.025
2000	88.2	0	0.064	0.054	0.052	0.046	0.038	0.027	0.022
2001	34.5	0	<i>0.044</i>	<i>0.043</i>	<i>0.041</i>	<i>0.038</i>	<i>0.036</i>	<i>0.030</i>	<i>0.026</i>
2002	96.7	0	0.095	0.066	0.047	0.042	0.038	0.028	0.024
2003	98.1	1	0.105	0.072	0.061	0.051	0.041	0.027	0.023
2004	94.8	1	0.106	0.058	0.049	0.042	0.036	0.028	0.024
2005	99.2	0	0.082	0.063	0.052	0.044	0.039	0.031	0.027
2006	91.5	1	0.127	0.082	0.066	0.053	0.041	0.030	0.024
2007	99.2	1	0.127	0.067	0.063	0.057	0.049	0.035	0.029

Exceedences shown in bold. Years with data availability below 75 per cent shown in italics.

Table 45: Percentiles of daily maximum one-hour ozone at Geelong South (1995–2007)

AAQ NEPM standard: 0.10ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	82.2	0	0.071	0.056	0.052	0.040	0.030	0.026	0.023
1996	86.8	0	0.091	0.063	0.056	0.044	0.033	0.027	0.022
1997	0.0								
1998	95.3	0	0.083	0.056	0.046	0.035	0.031	0.027	0.024
1999	95.3	0	0.073	0.053	0.048	0.040	0.033	0.027	0.022
2000	88.8	0	0.065	0.057	0.049	0.040	0.033	0.021	0.017
2001	92.3	0	0.082	0.064	0.057	0.040	0.032	0.024	0.020
2002	90.7	0	0.058	0.056	0.053	0.043	0.032	0.025	0.021
2003	97.3	0	0.081	0.069	0.063	0.043	0.033	0.023	0.020
2004	92.1	0	0.094	0.061	0.058	0.044	0.035	0.030	0.025
2005	97.8	0	0.080	0.059	0.056	0.046	0.039	0.031	0.028
2006	95.1	2	0.169	0.076	0.062	0.049	0.040	0.031	0.026
2007	99.7	0	0.088	0.068	0.063	0.053	0.045	0.035	0.030

Exceedences shown in bold. Years with data availability below 75 per cent shown in italics.

Table 46: Percentiles of daily maximum one-hour ozone at Melton (2002–2007)

AAQ NEPM standard: 0.10ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
2002	14.2		0.076	0.069	0.062	0.060	0.048	0.036	0.029
2003	97.8	1	0.112	0.083	0.074	0.056	0.046	0.032	0.029
2004	94.0	0	0.076	0.053	0.050	0.047	0.040	0.033	0.028
2005	94.0	0	0.079	0.063	0.056	0.048	0.043	0.036	0.031
2006	99.2	1	0.126	0.084	0.067	0.053	0.046	0.036	0.030
2007	89.6	0	0.085	0.076	0.071	0.064	0.054	0.037	0.032

Exceedences shown in bold. Years with data availability below 75 per cent shown in italics.

Table 47: Percentiles of daily maximum one-hour ozone at Mooroolbark (2002–2007)

AAQ NEPM standard: 0.10ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
2002	57.5	0	0.089	0.070	0.055	0.046	0.038	0.033	0.028
2003	99.7	0	0.098	0.072	0.065	0.055	0.047	0.031	0.026
2004	95.6	0	0.072	0.056	0.053	0.047	0.042	0.034	0.027
2005	97.8	0	0.089	0.064	0.053	0.045	0.042	0.035	0.029
2006	96.2	1	0.101	0.086	0.071	0.058	0.048	0.036	0.028
2007	99.7	0	0.084	0.076	0.072	0.057	0.051	0.038	0.031

Exceedences shown in bold. Years with data availability below 75 per cent shown in italics.

Table 48: Percentiles of daily maximum one-hour ozone at Point Cook (1995–2007)

AAQ NEPM standard: 0.10ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	99.7	1	0.111	0.076	0.060	0.046	0.039	0.031	0.027
1996	99.5	0	0.090	0.079	0.069	0.051	0.038	0.030	0.026
1997	86.8	2	0.126	0.080	0.064	0.049	0.037	0.030	0.025
1998	94.5	1	0.107	0.083	0.063	0.044	0.034	0.025	0.021
1999	91.2	0	0.083	0.071	0.067	0.055	0.040	0.028	0.023
2000	85.2	0	0.079	0.067	0.063	0.049	0.040	0.032	0.028
2001	91.0	0	0.099	0.072	0.064	0.050	0.044	0.031	0.025
2002	97.0	0	0.093	0.068	0.063	0.048	0.039	0.030	0.027
2003	97.0	0	0.094	0.080	0.069	0.053	0.041	0.031	0.025
2004	98.6	0	0.093	0.065	0.056	0.047	0.039	0.028	0.025
2005	97.0	0	0.092	0.068	0.059	0.047	0.038	0.031	0.027
2006	85.2	1	0.104	0.069	0.062	0.048	0.039	0.029	0.026
2007	99.5	0	0.095	0.070	0.064	0.057	0.047	0.038	0.034

Exceedences shown in bold.

Table 49: Percentiles of daily maximum one-hour ozone at Point Henry (1995–2007)

AAQ NEPM standard: 0.10ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	69.3	0	0.060	0.047	0.044	0.042	0.039	0.036	0.033
1996	98.1	1	0.104	0.065	0.058	0.047	0.036	0.032	0.029
1997	80.3	0	0.081	0.062	0.057	0.046	0.038	0.029	0.024
1998	27.7	0	0.087	0.072	0.067	0.052	0.043	0.032	0.025
1999	0.0								
2000	14.2								
2001	57.3	0	0.089	0.074	0.068	0.052	0.045	0.032	0.024
2002	97.0	0	0.069	0.065	0.059	0.045	0.040	0.030	0.027
2003	97.8	0	0.095	0.075	0.071	0.052	0.041	0.030	0.025
2004	97.3	0	0.093	0.060	0.054	0.043	0.037	0.029	0.025
2005	99.5	0	0.088	0.059	0.057	0.048	0.038	0.033	0.029
2006	98.9	1	0.144	0.070	0.057	0.047	0.039	0.030	0.026
2007	99.7	1	0.101	0.062	0.059	0.048	0.041	0.030	0.027

Exceedences shown in bold. Years with data availability below 75 per cent shown in italics.

Table 50: Percentiles of daily maximum one-hour ozone at Moe (1995–2007)

AAQ NEPM standard: 0.10ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	98.1	0	0.068	0.051	0.049	0.042	0.035	0.030	0.026
1996	98.4	0	0.052	0.042	0.038	0.034	0.030	0.025	0.022
1997	92.9	0	0.072	0.058	0.049	0.036	0.031	0.026	0.021
1998	94.2	0	0.046	0.043	0.039	0.031	0.028	0.022	0.018
1999	81.1	0	0.063	0.042	0.038	0.032	0.030	0.027	0.022
2000	86.6	0	0.066	0.055	0.049	0.040	0.034	0.029	0.025
2001	99.5	0	0.070	0.052	0.048	0.043	0.037	0.030	0.024
2002	96.4	0	0.059	0.050	0.046	0.041	0.036	0.031	0.027
2003	97.3	0	0.083	0.061	0.060	0.051	0.043	0.031	0.026
2004	100.0	0	0.055	0.052	0.049	0.044	0.039	0.031	0.027
2005	99.5	0	0.062	0.055	0.047	0.041	0.036	0.031	0.027
2006	89.0	1	0.104	0.077	0.069	0.051	0.041	0.030	0.027
2007	97.8	0	0.099	0.070	0.065	0.054	0.044	0.034	0.030

Exceedences shown in bold.

Table 51: Percentiles of daily maximum one-hour ozone at Traralgon (1995–2007)

AAQ NEPM standard: 0.10ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	92.6	0	0.050	0.043	0.041	0.036	0.031	0.025	0.021
1996	80.8	0	0.049	0.043	0.041	0.036	0.033	0.028	0.022
1997	<i>60.3</i>	<i>0</i>	<i>0.072</i>	<i>0.058</i>	<i>0.057</i>	<i>0.052</i>	<i>0.041</i>	<i>0.030</i>	<i>0.025</i>
1998	92.3	0	0.075	0.062	0.054	0.044	0.037	0.030	0.026
1999	<i>31.8</i>	<i>0</i>	<i>0.060</i>	<i>0.055</i>	<i>0.050</i>	<i>0.043</i>	<i>0.036</i>	<i>0.028</i>	<i>0.023</i>
2000	96.2	0	0.056	0.050	0.047	0.039	0.033	0.027	0.023
2001	97.0	0	0.064	0.053	0.048	0.040	0.034	0.028	0.024
2002	100.0	0	0.057	0.048	0.043	0.036	0.033	0.029	0.024
2003	97.3	0	0.077	0.062	0.060	0.049	0.037	0.030	0.024
2004	97.5	0	0.058	0.049	0.048	0.042	0.037	0.031	0.025
2005	86.3	0	0.067	0.050	0.046	0.040	0.035	0.031	0.026
2006	100.0	3	0.138	0.083	0.077	0.052	0.044	0.033	0.027
2007	99.2	0	0.094	0.067	0.061	0.052	0.041	0.031	0.027

Exceedences shown in bold. Years with data availability below 75 per cent shown in italics.

Table 52: Percentiles of daily maximum four-hour ozone at Alphington (1995–2007)

AAQ NEPM standard: 0.08ppm (4-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	95.9	0	0.067	0.050	0.046	0.039	0.032	0.025	0.021
1996	97.3	0	0.064	0.053	0.052	0.042	0.036	0.025	0.020
1997	91.2	0	0.078	0.070	0.060	0.049	0.035	0.024	0.018
1998	96.4	0	0.075	0.055	0.050	0.040	0.033	0.022	0.016
1999	97.8	0	0.067	0.054	0.052	0.041	0.033	0.025	0.018
2000	97.3	0	0.060	0.047	0.046	0.042	0.033	0.022	0.018
2001	91.5	0	0.062	0.051	0.046	0.040	0.034	0.025	0.020
2002	89.3	0	0.046	0.044	0.043	0.038	0.033	0.026	0.021
2003	95.9	1	0.090	0.058	0.053	0.047	0.038	0.028	0.023
2004	96.4	0	0.069	0.045	0.044	0.038	0.034	0.026	0.022
2005	92.6	0	0.078	0.070	0.060	0.049	0.035	0.024	0.018
2006	90.1	3	0.116	0.073	0.063	0.054	0.045	0.031	0.025
2007	98.6	1	0.115	0.065	0.062	0.053	0.046	0.033	0.027

Exceedences shown in bold.

Table 53: Percentiles of daily maximum four-hour ozone at Brighton (1995–2007)

AAQ NEPM standard: 0.08ppm (4-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	95.1	1	0.087	0.067	0.058	0.043	0.036	0.028	0.024
1996	95.6	0	0.078	0.065	0.056	0.044	0.035	0.027	0.022
1997	95.6	3	0.097	0.068	0.062	0.049	0.037	0.026	0.023
1998	95.6	1	0.082	0.062	0.055	0.042	0.034	0.026	0.021
1999	99.5	0	0.069	0.059	0.056	0.047	0.037	0.028	0.022
2000	96.4	0	0.064	0.061	0.052	0.044	0.038	0.026	0.022
2001	80.0	0	0.068	0.059	0.055	0.046	0.038	0.027	0.022
2002	93.2	0	0.072	0.056	0.048	0.039	0.034	0.028	0.023
2003	98.4	2	0.102	0.065	0.061	0.048	0.042	0.028	0.024
2004	94.5	1	0.092	0.057	0.051	0.042	0.036	0.029	0.024
2005	97.5	0	0.069	0.062	0.051	0.043	0.038	0.030	0.026
2006	92.9	3	0.105	0.075	0.065	0.054	0.043	0.031	0.025
2007	99.7	1	0.111	0.068	0.063	0.054	0.049	0.036	0.031

Exceedences shown in bold.

Table 54: Percentiles of daily maximum four-hour ozone at Dandenong (1995–2007)

AAQ NEPM standard: 0.08ppm (4-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	97.0	1	0.082	0.052	0.049	0.041	0.033	0.028	0.023
1996	94.2	0	0.068	0.056	0.050	0.044	0.035	0.027	0.022
1997	93.2	1	0.092	0.068	0.062	0.047	0.035	0.028	0.024
1998	98.9	0	0.076	0.065	0.059	0.044	0.036	0.027	0.023
1999	98.6	0	0.074	0.062	0.058	0.048	0.039	0.030	0.023
2000	<i>64.1</i>	<i>0</i>	<i>0.066</i>	<i>0.060</i>	<i>0.056</i>	<i>0.047</i>	<i>0.040</i>	<i>0.027</i>	<i>0.021</i>
2001	75.3	0	0.063	0.055	0.054	0.045	0.038	0.030	0.025
2002	85.2	0	0.063	0.053	0.052	0.043	0.038	0.030	0.025
2003	97.8	2	0.093	0.067	0.059	0.047	0.040	0.027	0.023
2004	96.7	0	0.067	0.058	0.046	0.040	0.035	0.027	0.023
2005	92.6	0	0.067	0.054	0.052	0.043	0.039	0.031	0.026
2006	98.6	1	0.096	0.061	0.058	0.052	0.042	0.031	0.026
2007	98.6	1	0.106	0.064	0.060	0.052	0.044	0.033	0.027

Exceedences shown in bold. Years with data availability below 75 per cent shown in italics.

Table 55: Percentiles of daily maximum four-hour ozone at Footscray (1995–2007)

AAQ NEPM standard: 0.08ppm (4-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	95.9	0	0.080	0.058	0.051	0.039	0.034	0.028	0.023
1996	96.2	0	0.070	0.062	0.057	0.043	0.036	0.027	0.023
1997	98.1	3	0.095	0.072	0.063	0.049	0.038	0.028	0.024
1998	94.2	1	0.089	0.055	0.051	0.041	0.035	0.027	0.022
1999	95.9	0	0.069	0.063	0.057	0.048	0.037	0.030	0.024
2000	87.7	0	0.055	0.052	0.047	0.043	0.035	0.026	0.021
2001	<i>34.5</i>	<i>0</i>	<i>0.042</i>	<i>0.042</i>	<i>0.040</i>	<i>0.035</i>	<i>0.034</i>	<i>0.028</i>	<i>0.025</i>
2002	96.7	0	0.080	0.051	0.046	0.038	0.034	0.027	0.023
2003	97.8	2	0.094	0.063	0.056	0.045	0.038	0.026	0.021
2004	94.8	1	0.083	0.051	0.045	0.039	0.034	0.027	0.022
2005	98.9	0	0.066	0.053	0.047	0.042	0.035	0.030	0.025
2006	91.2	3	0.103	0.070	0.059	0.047	0.040	0.028	0.023
2007	98.9	1	0.113	0.060	0.057	0.052	0.045	0.033	0.028

Exceedences shown in bold. Years with data availability below 75 per cent shown in italics.

Table 56: Percentiles of daily maximum four-hour ozone at Geelong South (1995–2007)

AAQ NEPM standard: 0.08ppm (4-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	91.8	0	0.065	0.051	0.048	0.037	0.028	0.025	0.022
1996	86.8	0	0.076	0.058	0.051	0.039	0.031	0.026	0.021
1997	0.0								
1998	95.1	0	0.076	0.048	0.042	0.033	0.029	0.026	0.022
1999	95.6	0	0.063	0.048	0.044	0.038	0.031	0.026	0.021
2000	89.0	0	0.057	0.052	0.045	0.035	0.030	0.020	0.016
2001	92.3	0	0.075	0.057	0.054	0.038	0.030	0.023	0.019
2002	89.3	0	0.053	0.048	0.046	0.038	0.031	0.024	0.020
2003	97.0	0	0.072	0.059	0.054	0.040	0.029	0.022	0.019
2004	91.3	1	0.085	0.054	0.052	0.041	0.034	0.028	0.023
2005	97.3	0	0.068	0.055	0.049	0.042	0.037	0.030	0.026
2006	94.2	2	0.142	0.070	0.059	0.047	0.038	0.030	0.025
2007	99.7	0	0.076	0.062	0.057	0.049	0.042	0.034	0.029

Exceedences shown in bold. Years with data availability below 75 per cent shown in italics.

Table 57: Percentiles of daily maximum four-hour ozone at Melton (2002–2007)

AAQ NEPM standard: 0.08ppm (4-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
2002	14.5								
2003	97.8	4	0.099	0.077	0.063	0.052	0.042	0.032	0.028
2004	94.0	0	0.068	0.050	0.047	0.043	0.038	0.031	0.027
2005	94.2	0	0.075	0.054	0.051	0.045	0.041	0.034	0.030
2006	99.2	3	0.115	0.073	0.060	0.051	0.043	0.034	0.029
2007	89.9	0	0.080	0.068	0.066	0.057	0.050	0.036	0.031

Exceedences shown in bold. Years with data availability below 75 per cent shown in italics.

Table 58: Percentiles of daily maximum four-hour ozone at Mooroolbark (2002–2007)

AAQ NEPM standard: 0.08ppm (4-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
2002	57.5	0	0.075	0.063	0.047	0.041	0.036	0.030	0.026
2003	98.9	3	0.090	0.065	0.056	0.050	0.044	0.030	0.025
2004	95.6	0	0.059	0.050	0.049	0.044	0.038	0.032	0.025
2005	97.8	0	0.072	0.055	0.049	0.043	0.039	0.033	0.028
2006	96.2	2	0.091	0.077	0.064	0.054	0.045	0.034	0.026
2007	99.5	0	0.077	0.072	0.066	0.054	0.047	0.036	0.030

Exceedences shown in bold. Years with data availability below 75 per cent shown in italics.

Table 59: Percentiles of daily maximum four-hour ozone at Point Cook (1995–2007)

AAQ NEPM standard: 0.08ppm (4-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	99.7	1	0.095	0.063	0.057	0.043	0.036	0.030	0.026
1996	99.5	0	0.079	0.066	0.057	0.045	0.034	0.029	0.025
1997	86.8	2	0.113	0.073	0.057	0.044	0.034	0.028	0.024
1998	94.8	3	0.090	0.075	0.061	0.039	0.032	0.024	0.020
1999	91.2	0	0.069	0.065	0.060	0.047	0.035	0.026	0.022
2000	85.5	0	0.067	0.060	0.058	0.046	0.037	0.030	0.027
2001	91.0	1	0.095	0.063	0.057	0.048	0.040	0.029	0.024
2002	96.4	0	0.070	0.062	0.056	0.044	0.036	0.029	0.025
2003	96.2	1	0.093	0.072	0.063	0.048	0.038	0.029	0.024
2004	98.6	1	0.082	0.058	0.051	0.044	0.036	0.027	0.024
2005	96.7	1	0.082	0.062	0.050	0.043	0.037	0.030	0.026
2006	84.9	1	0.089	0.061	0.057	0.046	0.036	0.027	0.025
2007	99.5	1	0.086	0.067	0.060	0.052	0.044	0.037	0.033

Exceedences shown in bold.

Table 60: Percentiles of daily maximum four-hour ozone at Point Henry (1995–2007)

AAQ NEPM standard: 0.08ppm (4-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	69.3	0	0.056	0.042	0.042	0.039	0.038	0.035	0.032
1996	98.1	1	0.097	0.058	0.054	0.042	0.034	0.031	0.028
1997	80.3	0	0.070	0.059	0.053	0.043	0.038	0.028	0.023
1998	27.7	0	0.076	0.064	0.060	0.043	0.038	0.030	0.023
1999	0.0								
2000	14.2	0	0.059	0.058	0.058	0.049	0.044	0.034	0.029
2001	57.3	1	0.085	0.067	0.061	0.051	0.042	0.030	0.023
2002	97.0	0	0.069	0.065	0.059	0.045	0.040	0.030	0.027
2003	97.8	1	0.083	0.065	0.061	0.049	0.037	0.029	0.024
2004	97.3	1	0.085	0.056	0.048	0.041	0.035	0.027	0.024
2005	99.5	0	0.076	0.056	0.051	0.045	0.036	0.031	0.028
2006	98.4	1	0.126	0.067	0.053	0.043	0.036	0.029	0.025
2007	99.7	1	0.085	0.058	0.052	0.045	0.038	0.029	0.026

Exceedences shown in bold. Years with data availability below 75 per cent shown in italics.

Table 61: Percentiles of daily maximum four-hour ozone at Moe (1995–2007)

AAQ NEPM standard: 0.08ppm (4-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	98.1	0	0.059	0.047	0.044	0.039	0.034	0.029	0.024
1996	98.4	0	0.047	0.038	0.036	0.032	0.029	0.025	0.021
1997	92.9	0	0.067	0.050	0.047	0.033	0.029	0.024	0.020
1998	94.2	0	0.044	0.038	0.035	0.030	0.025	0.020	0.017
1999	81.1	0	0.045	0.039	0.036	0.030	0.028	0.025	0.020
2000	86.6	0	0.056	0.051	0.045	0.037	0.033	0.028	0.024
2001	99.5	0	0.054	0.047	0.044	0.040	0.034	0.028	0.023
2002	96.7	0	0.056	0.046	0.041	0.037	0.035	0.030	0.026
2003	97.3	0	0.072	0.059	0.056	0.048	0.038	0.029	0.025
2004	100.0	0	0.051	0.046	0.044	0.040	0.036	0.030	0.025
2005	99.5	0	0.051	0.049	0.042	0.038	0.034	0.030	0.025
2006	88.8	3	0.094	0.065	0.056	0.047	0.038	0.030	0.025
2007	97.8	1	0.089	0.064	0.059	0.050	0.040	0.033	0.029

Exceedences shown in bold.

Table 62: Percentiles of daily maximum four-hour ozone at Traralgon (1995–2007)

AAQ NEPM standard: 0.08ppm (4-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	93.2	0	0.048	0.040	0.038	0.032	0.028	0.024	0.020
1996	80.8	0	0.043	0.039	0.037	0.033	0.031	0.026	0.021
1997	60.5	0	0.064	0.055	0.051	0.045	0.039	0.029	0.024
1998	92.1	0	0.058	0.053	0.048	0.041	0.035	0.029	0.024
1999	31.8	0	0.053	0.051	0.044	0.040	0.033	0.026	0.021
2000	96.7	0	0.050	0.046	0.043	0.034	0.031	0.026	0.021
2001	97.3	0	0.052	0.047	0.045	0.037	0.031	0.026	0.022
2002	100.0	0	0.049	0.046	0.038	0.034	0.031	0.027	0.022
2003	97.3	0	0.067	0.056	0.052	0.046	0.035	0.027	0.023
2004	97.3	0	0.050	0.044	0.043	0.039	0.034	0.029	0.023
2005	86.1	0	0.055	0.046	0.039	0.035	0.033	0.029	0.024
2006	100.0	2	0.123	0.072	0.067	0.046	0.041	0.031	0.026
2007	99.2	1	0.082	0.058	0.056	0.047	0.037	0.029	0.026

Exceedences shown in bold. Years with data availability below 75 per cent shown in italics.

Sulfur dioxide

Table 63: 2007 percentiles of daily peak one-hour sulfur dioxide concentrations in Victoria

AAQ NEPM standard: 0.20ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Region	Data availability	Max	Percentiles (ppm)					
Performance monitoring station	(% of days)	(ppm)	99th	98th	95th	90th	75th	50th
Port Phillip								
Alphington	99.5	0.022	0.010	0.008	0.006	0.005	0.004	0.002
AltonaNorth	97.3	0.039	0.032	0.029	0.023	0.018	0.010	0.005
GeelongSouth	98.9	0.083	0.033	0.027	0.017	0.013	0.008	0.003
Latrobe Valley								
Moe	98.9	0.066	0.032	0.019	0.015	0.011	0.007	0.003
Traralgon	96.2	0.092	0.041	0.029	0.022	0.016	0.011	0.006

Table 64: 2007 percentiles of daily sulfur dioxide concentrations in Victoria

AAQ NEPM standard: 0.08ppm (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Region	Data availability	Max	Percentiles (ppm)					
Performance monitoring station	(% of days)	(ppm)	99th	98th	95th	90th	75th	50th
Port Phillip								
Alphington	99.5	0.004	0.003	0.003	0.002	0.002	0.001	0.001
AltonaNorth	97.3	0.013	0.008	0.006	0.004	0.003	0.002	0.001
GeelongSouth	98.9	0.009	0.004	0.003	0.003	0.002	0.001	0.001
Latrobe Valley								
Moe	98.4	0.010	0.006	0.005	0.004	0.003	0.002	0.001
Traralgon	95.6	0.011	0.009	0.008	0.006	0.005	0.003	0.002

Table 65: Percentiles of daily maximum one-hour sulfur dioxide at Alphington (1995–2007)

AAQ NEPM standard: 0.20ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability	No. of exceedences	Max	Percentiles (ppm)					
	(% of days)	(days)	(ppm)	99th	98th	95th	90th	75th	50th
1995	71.5	0	0.015	0.008	0.007	0.005	0.004	0.002	0.000
1996	97.0	0	0.008	0.006	0.006	0.005	0.003	0.002	0.001
1997	94.2	0	0.012	0.010	0.008	0.006	0.004	0.003	0.001
1998	97.0	0	0.015	0.012	0.008	0.007	0.005	0.003	0.002
1999	97.8	0	0.012	0.007	0.006	0.005	0.003	0.002	0.001
2000	97.8	0	0.010	0.007	0.006	0.004	0.003	0.001	0.000
2001	93.4	0	0.009	0.008	0.007	0.006	0.004	0.002	0.000
2002	98.4	0	0.012	0.008	0.007	0.006	0.004	0.002	0.000
2003	96.7	0	0.021	0.007	0.006	0.004	0.003	0.002	0.001
2004	99.7	0	0.014	0.009	0.007	0.005	0.004	0.003	0.001
2005	94.5	0	0.011	0.008	0.007	0.005	0.004	0.002	0.001
2006	90.7	0	0.013	0.011	0.009	0.008	0.006	0.004	0.002
2007	99.5	0	0.022	0.010	0.008	0.006	0.005	0.004	0.002

Years with data availability below 75 per cent shown in italics.

Table 66: Percentiles of daily maximum one-hour sulfur dioxide at Altona North (1995–2007)

AAQ NEPM standard: 0.20ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	97.5	0	0.039	0.023	0.022	0.018	0.015	0.008	0.004
1996	87.7	0	0.041	0.025	0.021	0.017	0.012	0.008	0.005
1997	96.4	0	0.069	0.054	0.048	0.031	0.022	0.009	0.004
1998	92.9	0	0.125	0.080	0.073	0.051	0.035	0.017	0.007
1999	96.2	0	0.059	0.044	0.039	0.032	0.024	0.012	0.005
2000	92.3	0	0.068	0.049	0.044	0.031	0.024	0.010	0.003
2001	95.6	0	0.073	0.053	0.043	0.035	0.026	0.012	0.004
2002	97.3	0	0.122	0.045	0.037	0.024	0.019	0.010	0.004
2003	94.8	0	0.036	0.032	0.027	0.020	0.014	0.007	0.003
2004	97.5	0	0.044	0.028	0.026	0.021	0.017	0.010	0.005
2005	96.2	0	0.044	0.032	0.028	0.021	0.018	0.009	0.005
2006	92.3	0	0.053	0.039	0.031	0.024	0.020	0.011	0.005
2007	97.3	0	0.039	0.032	0.029	0.023	0.018	0.010	0.005

Table 67: Percentiles of daily maximum one-hour sulfur dioxide at Geelong South (1995–2007)

AAQ NEPM standard: 0.20ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	88.2	0	0.088	0.030	0.023	0.015	0.011	0.006	0.002
1996	76.8	0	0.032	0.026	0.023	0.016	0.010	0.004	0.001
1997	0.0								
1998	68.8	0	0.038	0.023	0.021	0.016	0.012	0.008	0.003
1999	94.0	0	0.032	0.020	0.019	0.015	0.011	0.007	0.003
2000	88.2	0	0.029	0.019	0.014	0.010	0.007	0.004	0.001
2001	50.7	0	0.037	0.024	0.023	0.018	0.012	0.006	0.002
2002	84.9	0	0.040	0.029	0.024	0.016	0.012	0.005	0.001
2003	96.2	0	0.039	0.032	0.026	0.015	0.011	0.005	0.001
2004	90.7	0	0.069	0.026	0.023	0.019	0.013	0.007	0.003
2005	96.4	0	0.054	0.029	0.022	0.017	0.012	0.008	0.003
2006	93.2	0	0.036	0.029	0.026	0.017	0.013	0.007	0.003
2007	98.9	0	0.083	0.033	0.027	0.017	0.013	0.008	0.003

Years with data availability below 75 per cent shown in italics.

Table 68: Percentiles of daily maximum one-hour sulfur dioxide at RMIT (CBD) (1995–2006)

AAQ NEPM standard: 0.20ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	2.7	0	0.008	0.008	0.007	0.007	0.005	0.004	0.003
1996	82.8	0	0.016	0.014	0.013	0.009	0.007	0.004	0.001
1997	97.8	0	0.029	0.025	0.018	0.014	0.011	0.007	0.004
1998	92.6	0	0.038	0.020	0.016	0.013	0.010	0.007	0.003
1999	98.6	0	0.020	0.013	0.012	0.010	0.008	0.005	0.002
2000	96.7	0	0.017	0.014	0.013	0.010	0.007	0.004	0.002
2001	94.2	0	0.018	0.015	0.013	0.012	0.009	0.006	0.002
2002	94.2	0	0.024	0.017	0.013	0.012	0.010	0.006	0.002
2003	99.2	0	0.035	0.017	0.013	0.010	0.008	0.005	0.002
2004	98.4	0	0.023	0.017	0.015	0.011	0.009	0.006	0.003
2005	98.9	0	0.017	0.015	0.012	0.010	0.008	0.005	0.003
2006	76.2	0	0.034	0.020	0.017	0.014	0.011	0.007	0.003

Years with data availability below 75 per cent shown in italics.

Table 69: Percentiles of daily maximum one-hour sulfur dioxide at Moe (1995–2007)

AAQ NEPM standard: 0.20ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	97.8	0	0.025	0.021	0.017	0.011	0.008	0.004	0.002
1996	98.9	0	0.033	0.019	0.015	0.012	0.008	0.004	0.002
1997	92.3	0	0.047	0.024	0.018	0.014	0.010	0.005	0.002
1998	94.8	0	0.032	0.023	0.021	0.013	0.009	0.005	0.002
1999	94.0	0	0.030	0.020	0.017	0.015	0.011	0.006	0.002
2000	98.4	0	0.039	0.032	0.025	0.017	0.013	0.007	0.004
2001	98.4	0	0.034	0.026	0.022	0.016	0.012	0.007	0.003
2002	97.5	0	0.046	0.022	0.020	0.014	0.010	0.005	0.003
2003	99.2	0	0.030	0.026	0.024	0.019	0.013	0.006	0.003
2004	99.7	0	0.048	0.024	0.021	0.016	0.009	0.004	0.001
2005	100.0	0	0.047	0.029	0.026	0.017	0.012	0.006	0.002
2006	88.5	0	0.046	0.028	0.024	0.017	0.012	0.005	0.002
2007	98.9	0	0.066	0.032	0.019	0.015	0.011	0.007	0.003

Table 70: Percentiles of daily maximum one-hour sulfur dioxide at Traralgon (1995–2007)

AAQ NEPM standard: 0.20ppm (1-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	88.5	0	0.049	0.021	0.020	0.015	0.011	0.007	0.004
1996	85.8	0	0.032	0.017	0.014	0.011	0.008	0.006	0.003
1997	<i>67.1</i>	<i>0</i>	<i>0.116</i>	<i>0.025</i>	<i>0.021</i>	<i>0.014</i>	<i>0.011</i>	<i>0.007</i>	<i>0.004</i>
1998	84.1	0	0.055	0.022	0.020	0.016	0.013	0.009	0.006
1999	80.3	0	0.032	0.020	0.017	0.013	0.012	0.007	0.004
2000	90.4	0	0.061	0.038	0.024	0.018	0.013	0.008	0.004
2001	98.6	0	0.063	0.036	0.020	0.014	0.011	0.008	0.005
2002	96.7	0	0.062	0.032	0.022	0.016	0.012	0.008	0.005
2003	97.5	0	0.082	0.038	0.030	0.020	0.015	0.009	0.005
2004	98.4	0	0.079	0.042	0.030	0.018	0.013	0.008	0.005
2005	91.5	0	0.061	0.044	0.034	0.022	0.015	0.009	0.005
2006	97.5	0	0.095	0.037	0.033	0.022	0.017	0.010	0.006
2007	96.2	0	0.092	0.041	0.029	0.022	0.016	0.011	0.006

Years with data availability below 75 per cent shown in italics.

Table 71: Percentiles of daily average sulfur dioxide at Alphington (1995–2007)

AAQ NEPM standard: 0.08ppm (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	<i>71.5</i>	<i>0</i>	<i>0.002</i>	<i>0.001</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>-0.001</i>	<i>-0.001</i>
1996	97.0	0	0.003	0.002	0.002	0.002	0.001	0.001	0.000
1997	94.2	0	0.003	0.002	0.002	0.001	0.001	0.001	0.000
1998	97.0	0	0.003	0.002	0.002	0.002	0.001	0.001	0.000
1999	97.8	0	0.001	0.001	0.001	0.001	0.000	0.000	-0.001
2000	97.8	0	0.002	0.001	0.001	0.000	0.000	0.000	-0.001
2001	93.4	0	0.002	0.001	0.001	0.000	0.000	0.000	-0.001
2002	98.4	0	0.002	0.001	0.001	0.000	0.000	0.000	-0.001
2003	96.7	0	0.002	0.002	0.001	0.001	0.001	0.000	0.000
2004	99.7	0	0.003	0.002	0.002	0.001	0.001	0.001	0.000
2005	94.5	0	0.002	0.002	0.002	0.001	0.001	0.001	0.000
2006	90.7	0	0.004	0.003	0.003	0.002	0.002	0.001	0.001
2007	99.5	0	0.004	0.003	0.003	0.002	0.002	0.001	0.001

Years with data availability below 75 per cent shown in italics.

Table 72: Percentiles of daily average sulfur dioxide at Altona North (1995–2007)

AAQ NEPM standard: 0.08ppm (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	97.5	0	0.007	0.005	0.005	0.003	0.002	0.001	0.000
1996	87.7	0	0.018	0.008	0.005	0.004	0.004	0.002	0.001
1997	96.4	0	0.011	0.010	0.008	0.005	0.003	0.001	0.000
1998	92.9	0	0.021	0.017	0.014	0.010	0.005	0.003	0.001
1999	96.2	0	0.016	0.009	0.006	0.005	0.003	0.001	0.000
2000	92.3	0	0.010	0.008	0.006	0.004	0.003	0.001	0.000
2001	95.6	0	0.033	0.013	0.011	0.006	0.004	0.001	0.000
2002	97.3	0	0.019	0.008	0.008	0.005	0.003	0.001	0.001
2003	94.8	0	0.009	0.007	0.005	0.003	0.002	0.001	0.000
2004	97.5	0	0.013	0.008	0.006	0.005	0.003	0.002	0.001
2005	96.2	0	0.010	0.007	0.006	0.004	0.003	0.002	0.001
2006	92.3	0	0.019	0.009	0.006	0.004	0.003	0.002	0.001
2007	97.3	0	0.013	0.008	0.006	0.004	0.003	0.002	0.001

Table 73: Percentiles of daily average sulfur dioxide at Geelong South (1995–2007)

AAQ NEPM standard: 0.08ppm (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	98.4	0	0.004	0.003	0.003	0.002	0.001	0.000	-0.001
1996	76.8	0	0.005	0.004	0.003	0.002	0.001	0.000	-0.001
1997	<i>0.0</i>								
1998	<i>68.8</i>	<i>0</i>	<i>0.006</i>	<i>0.004</i>	<i>0.004</i>	<i>0.003</i>	<i>0.002</i>	<i>0.001</i>	<i>0.001</i>
1999	94.0	0	0.005	0.003	0.003	0.002	0.002	0.001	0.000
2000	88.2	0	0.006	0.003	0.002	0.002	0.001	0.001	0.000
2001	<i>50.7</i>	<i>0</i>	<i>0.006</i>	<i>0.005</i>	<i>0.003</i>	<i>0.002</i>	<i>0.001</i>	<i>0.000</i>	<i>-0.001</i>
2002	84.9	0	0.004	0.002	0.002	0.001	0.001	0.000	-0.001
2003	96.2	0	0.004	0.003	0.002	0.002	0.001	0.000	-0.001
2004	90.7	0	0.006	0.004	0.003	0.002	0.002	0.001	0.000
2005	96.4	0	0.008	0.005	0.004	0.003	0.002	0.001	0.001
2006	93.2	0	0.005	0.005	0.004	0.003	0.002	0.001	0.001
2007	98.9	0	0.009	0.004	0.003	0.003	0.002	0.001	0.001

Years with data availability below 75 per cent shown in italics.

Table 74: Percentiles of daily average sulfur dioxide at RMIT (CBD) (1995–2006)

AAQ NEPM standard: 0.08ppm (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	2.7								
1996	82.8	0	0.003	0.003	0.002	0.002	0.001	0.000	-0.001
1997	97.8	0	0.006	0.006	0.005	0.004	0.003	0.002	0.001
1998	92.6	0	0.007	0.005	0.004	0.003	0.002	0.001	0.000
1999	98.6	0	0.005	0.003	0.003	0.002	0.002	0.001	0.000
2000	96.7	0	0.006	0.004	0.003	0.002	0.002	0.001	0.000
2001	94.2	0	0.004	0.004	0.003	0.002	0.002	0.000	0.000
2002	94.2	0	0.005	0.004	0.003	0.003	0.002	0.001	0.000
2003	99.2	0	0.006	0.005	0.004	0.003	0.002	0.001	0.001
2004	98.4	0	0.007	0.004	0.004	0.003	0.003	0.002	0.001
2005	98.9	0	0.005	0.004	0.003	0.003	0.002	0.001	0.001
2006	76.2	0	0.008	0.005	0.004	0.003	0.003	0.002	0.001
2007	0.0								

Years with data availability below 75 per cent shown in italics.

Table 75: Percentiles of daily average sulfur dioxide at Moe (1995–2007)

AAQ NEPM standard: 0.08ppm (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	97.8	0	0.007	0.005	0.004	0.004	0.003	0.002	0.001
1996	98.9	0	0.008	0.005	0.004	0.003	0.003	0.002	0.001
1997	92.3	0	0.010	0.007	0.006	0.004	0.003	0.002	0.001
1998	94.8	0	0.007	0.005	0.005	0.004	0.003	0.001	0.000
1999	94.0	0	0.008	0.005	0.005	0.004	0.003	0.002	0.001
2000	98.4	0	0.012	0.008	0.007	0.006	0.005	0.003	0.002
2001	98.4	0	0.009	0.006	0.006	0.005	0.004	0.003	0.001
2002	97.5	0	0.010	0.007	0.006	0.004	0.004	0.002	0.001
2003	99.2	0	0.009	0.007	0.007	0.005	0.004	0.002	0.001
2004	99.7	0	0.006	0.005	0.004	0.003	0.002	0.001	0.000
2005	100.0	0	0.009	0.006	0.004	0.004	0.003	0.002	0.001
2006	88.5	0	0.009	0.007	0.005	0.004	0.003	0.002	0.001
2007	98.4	0	0.010	0.006	0.005	0.004	0.003	0.002	0.001

Table 76: Percentiles of daily average sulfur dioxide at Traralgon (1995–2007)

AAQ NEPM standard: 0.08ppm (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 1 day per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (ppm)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	88.5	0	0.005	0.004	0.004	0.003	0.003	0.002	0.001
1996	85.8	0	0.008	0.004	0.003	0.003	0.002	0.002	0.001
1997	<i>67.1</i>	<i>0</i>	<i>0.028</i>	<i>0.008</i>	<i>0.006</i>	<i>0.004</i>	<i>0.003</i>	<i>0.002</i>	<i>0.001</i>
1998	84.1	0	0.009	0.007	0.007	0.005	0.005	0.004	0.002
1999	80.3	0	0.006	0.005	0.004	0.004	0.003	0.003	0.001
2000	90.4	0	0.013	0.007	0.005	0.004	0.003	0.002	0.001
2001	98.6	0	0.008	0.006	0.005	0.004	0.003	0.002	0.002
2002	96.7	0	0.009	0.008	0.005	0.004	0.004	0.003	0.002
2003	97.5	0	0.008	0.006	0.005	0.005	0.004	0.002	0.001
2004	98.4	0	0.010	0.007	0.006	0.004	0.003	0.002	0.001
2005	91.5	0	0.012	0.007	0.005	0.004	0.003	0.002	0.001
2006	97.5	0	0.023	0.007	0.006	0.005	0.004	0.003	0.002
2007	95.6	0	0.011	0.009	0.008	0.006	0.005	0.003	0.002

Years with data availability below 75 per cent shown in italics.

Particles as PM₁₀

Table 77: 2007 percentiles of daily PM₁₀ concentrations in Victoria

AAQ NEPM standard: 50 µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Region Performance monitoring station	Data availability (% of days)	Max (µg/m ³)	Percentiles (µg/m ³)					
			99th	98th	95th	90th	75th	50th
Port Phillip								
Alphington	100.0	83.1	43.5	40.4	35.2	30.8	22.8	17.6
Brighton	99.7	78.4	35.9	32.7	29.4	24.1	18.1	13.7
Dandenong	100.0	84.6	52.3	47.3	39.4	35.0	27.4	19.1
Footscray	99.5	65.9	49.8	42.2	38.6	32.2	24.4	17.8
Geelong South	98.9	129.1	65.2	59.9	43.4	32.8	26.5	19.1
Mooroolbark	100.0	136.1	63.0	51.7	43.0	37.3	27.4	19.4
Richmond	94.0	78.7	44.8	36.6	32.5	27.9	21.0	16.3
Latrobe Valley								
Moe	90.7	137.2	71.0	56.3	43.5	35.1	25.6	18.6
Traralgon	96.4	151.2	52.0	40.8	32.3	27.0	21.7	17.0
Warrnambool	82.7	48.6	42.7	38.0	33.3	28.7	19.5	12.9

Stations with data availability below 75 per cent shown in italics. Exceedences shown in bold.

Table 78: Percentiles of 24-hour PM₁₀ at Alphington (1995–2007)

AAQ NEPM standard: 50 µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (µg/m ³)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1995	63.0	0	43.3	37.3	35.1	30.4	26.1	21.2	17.0
1996	97.0	0	41.7	39.6	37.8	30.4	26.1	21.5	17.2
1997	98.1	2	68.6	44.3	37.8	33.4	29.5	23.0	18.1
1998	90.1	1	53.5	46.0	42.1	36.6	31.8	24.4	18.5
1999	84.7	0	43.7	34.1	32.7	30.3	26.3	21.6	17.4
2000	95.1	2	56.5	43.6	34.8	31.6	26.8	21.4	16.8
2001	91.0	2	72.6	39.6	35.1	32.8	27.9	23.4	17.2
2002	97.5	1	66.2	35.9	34.5	30.4	27.9	22.4	17.2
2003	95.9	10	181.7	80.9	56.4	38.3	30.9	22.9	17.2
2004	97.0	1	51.6	45.2	36.8	30.9	27.6	22.0	16.5
2005	92.6	0	46.6	40.7	36.8	34.5	31.4	23.3	17.0
2006	87.1	8	154.7	82.5	58.4	40.0	31.3	23.9	18.4
2007	100.0	2	83.1	43.5	40.4	35.2	30.8	22.8	17.6

Years with data availability below 75 per cent shown in italics. Exceedences shown in bold.

Table 79: Percentiles of 24-hour PM₁₀ at Brighton (1996–2007)

AAQ NEPM standard: 50 µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (µg/m ³)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1996	5.5								
1997	47.4	1	54.8	43.9	36.9	32.9	30.2	22.4	17.7
1998	85.2	0	49.0	44.7	40.3	34.0	29.0	21.4	16.4
1999	99.5	0	49.0	32.0	31.0	26.0	23.9	19.3	15.7
2000	94.0	2	52.6	45.0	32.5	26.4	23.4	17.9	13.8
2001	95.6	1	70.8	33.4	30.9	26.5	24.3	19.4	13.9
2002	97.3	1	69.1	34.7	31.1	28.2	24.8	19.6	14.7
2003	88.8	8	182.3	89.3	67.8	35.9	30.5	21.5	15.8
2004	89.3	0	44.9	40.5	36.6	30.4	26.4	20.9	15.9
2005	84.1	0	41.5	33.8	32.7	28.0	25.8	19.7	14.4
2006	89.9	6	109.1	78.0	46.2	36.7	25.9	19.8	13.8
2007	99.7	1	78.4	35.9	32.7	29.4	24.1	18.1	13.7

Years with data availability below 75 per cent shown in italics. Exceedences shown in bold.

Table 80: Percentiles of 24-hour PM₁₀ at Dandenong (1998–2007)

AAQ NEPM standard: 50 µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (µg/m ³)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1998	69.6	1	50.4	42.8	41.1	35.1	30.3	23.5	17.4
1999	65.2	1	52.3	40.9	37.0	32.1	27.3	22.4	17.1
2000	73.8	1	74.5	43.8	39.8	32.3	29.3	22.5	15.3
2001	14.5								
2002	87.4	3	84.8	45.6	37.6	31.5	26.5	21.0	15.8
2003	93.4	8	295.1	92.3	52.4	39.0	30.9	23.4	17.6
2004	92.3	1	50.1	44.5	42.1	35.7	30.8	23.4	16.7
2005	90.1	0	43.7	40.5	37.5	34.0	31.5	24.8	17.4
2006	100.0	12	149.2	90.9	71.3	47.5	38.2	30.0	22.8
2007	100.0	5	84.6	52.3	47.3	39.4	35.0	27.4	19.1

Years with data availability below 75 per cent shown in italics. Exceedences shown in bold.

Table 81: Percentiles of 24-hour PM₁₀ at Footscray (1996–2007)

AAQ NEPM standard: 50 µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (µg/m ³)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
1996	13.1								
1997	98.9	4	65.5	50.1	41.5	38.2	32.5	25.7	19.8
1998	94.8	4	59.8	50.5	43.9	41.4	34.7	26.9	19.8
1999	96.7	1	50.7	41.2	38.0	32.8	28.4	23.9	19.1
2000	89.0	2	57.8	43.6	40.7	36.6	30.0	23.9	17.6
2001	40.5	0	38.9	33.7	28.4	26.3	23.5	18.2	15.1
2002	98.4	2	79.1	42.9	38.7	32.2	28.3	22.1	17.5
2003	87.7	10	314.5	89.1	66.0	41.0	32.2	23.4	17.6
2004	93.2	3	58.1	48.4	40.4	33.5	29.1	22.3	16.1
2005	96.4	0	48.9	44.7	41.3	37.4	35.0	26.0	18.9
2006	90.1	11	124.5	77.0	55.9	41.0	35.5	25.8	19.5
2007	99.5	4	65.9	49.8	42.2	38.6	32.2	24.4	17.8

Years with data availability below 75 per cent shown in italics. Exceedences shown in bold.

Table 82: Percentiles of 24-hour PM₁₀ at Geelong (2002–2007)

AAQ NEPM standard: 50 µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (µg/m ³)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
2002	32.1	6	81.1	73.2	56.8	49.5	35.8	27.4	20.1
2003	94.0	10	148.7	80.2	57.7	45.3	35.3	25.6	18.4
2004	91.8	11	149.0	62.5	53.5	44.0	34.3	26.1	18.3
2005	96.2	7	83.0	55.2	49.3	40.6	33.7	26.6	18.5
2006	91.0	17	116.4	98.0	72.2	49.1	38.0	26.9	19.6
2007	98.9	14	129.1	65.2	59.9	43.4	32.8	26.5	19.1

Years with data availability below 75 per cent shown in italics. Exceedences shown in bold.

Table 83: Percentiles of 24-hour PM₁₀ at Mooroolbark (2002–2007)

AAQ NEPM standard: 50 µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (µg/m ³)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
2002	57.0	1	66.7	44.9	44.3	39.7	33.2	27.0	19.9
2003	91.8	13	322.2	118.1	91.3	45.6	37.4	26.8	19.1
2004	94.8	1	63.9	46.0	42.8	34.7	30.1	23.9	17.3
2005	99.5	9	57.6	53.7	52.1	43.1	36.1	27.4	19.3
2006	97.3	17	219.9	135.9	69.6	46.1	39.2	29.1	21.3
2007	100.0	11	136.1	63.0	51.7	43.0	37.3	27.4	19.4

Years with data availability below 75 per cent shown in italics. Exceedences shown in bold.

Table 84: Percentiles of 24-hour PM₁₀ at Richmond (2002–2007)

AAQ NEPM standard: 50 µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (µg/m ³)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
2002	92.6	1	70.0	40.3	34.7	29.2	26.5	21.2	16.5
2003	92.3	6	274.9	73.8	48.2	33.2	29.1	21.6	16.5
2004	100.0	0	43.9	40.6	35.7	30.0	26.0	20.7	15.9
2005	96.2	1	54.9	39.0	37.0	32.0	28.9	22.5	17.1
2006	97.5	9	140.0	78.6	53.5	37.9	31.4	24.3	18.4
2007	94.0	3	78.7	44.8	36.6	32.5	27.9	21.0	16.3

Exceedences shown in bold.

Table 85: Percentiles of 24-hour PM₁₀ at RMIT (CBD) (2002–2006)

AAQ NEPM standard: 50 µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (µg/m ³)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
2002	23.3	2	82.9	66.3	51.5	37.6	33.3	27.2	21.1
2003	96.7	11	279.4	83.5	58.3	38.8	31.3	23.9	18.7
2004	94.5	2	79.8	46.7	41.8	32.3	28.9	23.5	18.2
2005	98.4	0	41.7	36.5	35.2	33.2	29.4	22.8	17.4
2006	78.4	2	58.0	43.4	41.7	36.9	30.1	23.6	18.0

Years with data availability below 75 per cent shown in italics. Exceedences shown in bold.

Table 86: Percentiles of 24-hour PM₁₀ at Moe (2002–2007)

AAQ NEPM standard: 50 µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (µg/m ³)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
2002	14.8								
2003	98.1	11	288.8	81.2	56.2	37.7	31.0	21.2	14.7
2004	90.2	1	56.3	41.2	37.6	31.8	27.8	20.0	14.5
2005	99.7	0	36.9	33.4	32.6	28.5	24.7	19.8	14.2
2006	87.9	15	254.0	135.3	85.2	42.3	28.7	21.6	16.0
2007	90.7	13	137.2	71.0	56.3	43.5	35.1	25.6	18.6

Years with data availability below 75 per cent shown in italics. Exceedences shown in bold.

Table 87: Percentiles of 24-hour PM₁₀ at Traralgon (2002–2007)

AAQ NEPM standard: 50 µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (µg/m ³)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
2002	15.3	0	37.1	33.2	30.0	28.8	26.4	23.5	18.7
2003	98.1	7	237.8	59.3	47.5	37.2	27.3	21.6	16.8
2004	99.7	0	44.5	34.2	31.8	29.8	25.9	20.6	15.9
2005	90.1	0	44.9	41.0	36.8	31.5	26.3	20.8	16.2
2006	99.7	8	193.5	82.6	50.3	32.4	27.3	22.1	17.5
2007	96.4	5	151.2	52.0	40.8	32.3	27.0	21.7	17.0

Years with data availability below 75 per cent shown in italics. Exceedences shown in bold.

Particles as PM_{2.5}

Table 88: 2007 percentiles of Daily PM_{2.5} Concentrations in Victoria

AAQ NEPM Advisory Reporting Standard: 25 µg/m³ (24-hour average)

Region	Data availability (% of days)	Max (µg/m ³)	Percentiles (µg/m ³)					
Performance monitoring station			99th	98th	95th	90th	75th	50th
Port Phillip								
Alphington	95.1	36.0	30.7	24.7	17.1	12.6	8.9	6.5
Footscray	95.1	33.1	24.7	22.4	17.0	11.3	8.5	6.4

Monitoring by reference method (one-day-in-three). Exceedences shown in bold.

Table 89: Percentiles of Daily PM_{2.5} at Alphington (2002–2007)

AAQ NEPM standard: 25 µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (µg/m ³)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
2002	33.6	0	19.3	17.9	16.6	11.6	11.0	8.7	6.0
2003	91.8	5	41.0	39.0	34.2	19.2	15.5	9.1	6.0
2004	94.3	1	27.4	24.2	19.4	13.0	11.3	8.6	6.0
2005	94.3	3	38.3	31.2	27.0	19.5	16.8	9.3	7.2
2006	86.9	6	56.4	36.9	31.0	25.4	16.4	10.7	7.6
2007	95.1	3	36.0	30.7	24.7	17.1	12.6	8.9	6.5

Monitoring by reference method (one-day-in-three). Years with data availability below 75 per cent shown in italics. Exceedences shown in bold.

Table 90: Percentiles of Daily PM_{2.5} at Footscray (2002–2007)

AAQ NEPM standard: 25 µg/m³ (24-hour average)

AAQ NEPM 2008 Goal: Standard exceeded on no more than 5 days per year

Year	Data availability (% of days)	No. of exceedences (days)	Max (µg/m ³)	Percentiles (ppm)					
				99th	98th	95th	90th	75th	50th
2002	22.1	0	10.2	10.2	10.1	9.6	8.3	7.2	4.2
2003	80.3	3	55.7	43.5	29.2	22.5	15.0	8.4	5.1
2004	89.3	0	22.3	21.8	19.7	13.9	10.2	7.5	5.7
2005	81.1	2	32.8	31.2	21.3	16.8	13.5	9.0	6.1
2006	65.6	2	36.7	31.4	22.5	16.6	14.3	9.4	6.1
2007	95.1	1	33.1	24.7	22.4	17.0	11.3	8.5	6.4

Monitoring by reference method (one-day-in-three). Years with data availability below 75 per cent shown in italics. Exceedences shown in bold.

Monitoring for the PM_{2.5} Equivalence Program was conducted using TEOM instruments. Results are presented in Tables 91–93.

Table 91: PM_{2.5} Equivalence Program 2007 TEOM monitoring – Daily Concentrations in Victoria

Region	Data availability (% of days)	Max (µg/m ³)	Percentiles (µg/m ³)					
Performance monitoring station			99th	98th	95th	90th	75th	50th
Port Phillip								
Alphington	100.0	59.4	21.7	17.9	14.3	12.0	7.5	5.0
Footscray	99.5	42.9	18.9	16.0	12.0	10.4	6.3	4.2

Table 92: Percentiles of Daily TEOM PM_{2.5} (Equivalence Program) at Alphington (2003–2007)

Year	Data availability (% of days)	Max (µg/m ³)	Percentiles (µg/m ³)					
			99th	98th	95th	90th	75th	50th
2003	94.2	59.5	39.2	29.9	17.9	13.7	8.3	5.6
2004	94.8	21.7	15.6	12.3	10.1	7.8	6.1	4.3
2005	93.4	24.8	17.9	16.2	14.0	11.2	6.9	4.3
2006	87.7	112.6	50.5	28.7	14.9	11.2	7.6	4.7
2007	100.0	59.4	21.7	17.9	14.3	12.0	7.5	5.0

Table 93: Percentiles of Daily TEOM PM_{2.5} (Equivalence Program) at Footscray (2003–2007)

Region	Data availability (% of days)	Max (µg/m ³)	Percentiles (µg/m ³)					
			99th	98th	95th	90th	75th	50th
2003	<i>10.1</i>							
2004	88.5	23.8	14.1	12.5	9.9	8.2	5.8	3.8
2005	99.7	20.3	14.3	13.0	10.8	9.0	5.9	3.9
2006	91.8	95.7	44.0	23.2	15.6	11.3	6.8	4.3
2007	99.5	42.9	18.9	16.0	12.0	10.4	6.3	4.2

Years with data availability below 75 per cent shown in italics.