



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.

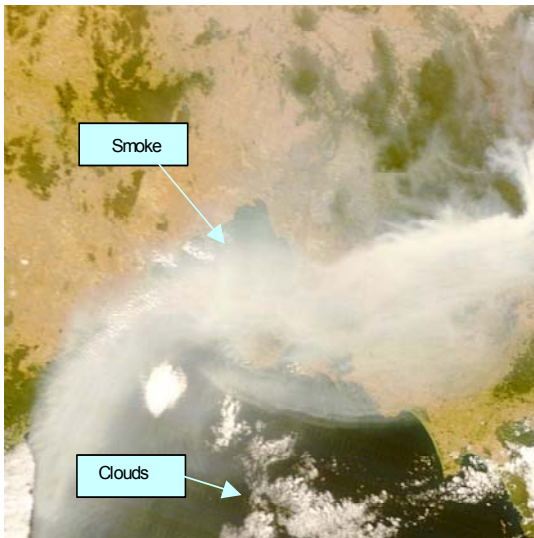


Figure 1: Bushfire smoke over Melbourne, 9 January 2007

(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 category | Site type | | | | |
|-------------------------|-------------------|-----------|-----------------|----------------|-----------------|------------------|
| | | CO | NO ₂ | O ₃ | SO ₂ | PM ₁₀ |
| Port Phillip | | | | | | |
| Alphington | Res/LI | G* | G* | Pop | Pop* | G* |
| Altona North | I/Res | | | | G | |
| Brighton | Res | | G | Pop* | | Pop |
| Dandenong | LI | | | Pop | | Pop |
| Footscray | I/Res | | G* | G* | | G* |
| Geelong South | LI/Res | G* | G* | Pop* | G* | G* |
| Melton | Res | | | G | | |
| Mooroolbark | Res | | | Pop | | Pop |
| Point Cook | Rur/Res | | Pop* | G* | | |
| Point Henry | I/Rur | | | Pop | | |
| Richmond | Res | G | | | | G |
| RMIT (CBD) ^a | CBD | G* | G* | | G | G* |
| Latrobe Valley | | | | | | |
| Moe | Res | | Pop | G | G | G |
| Traralgon | 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. | | |

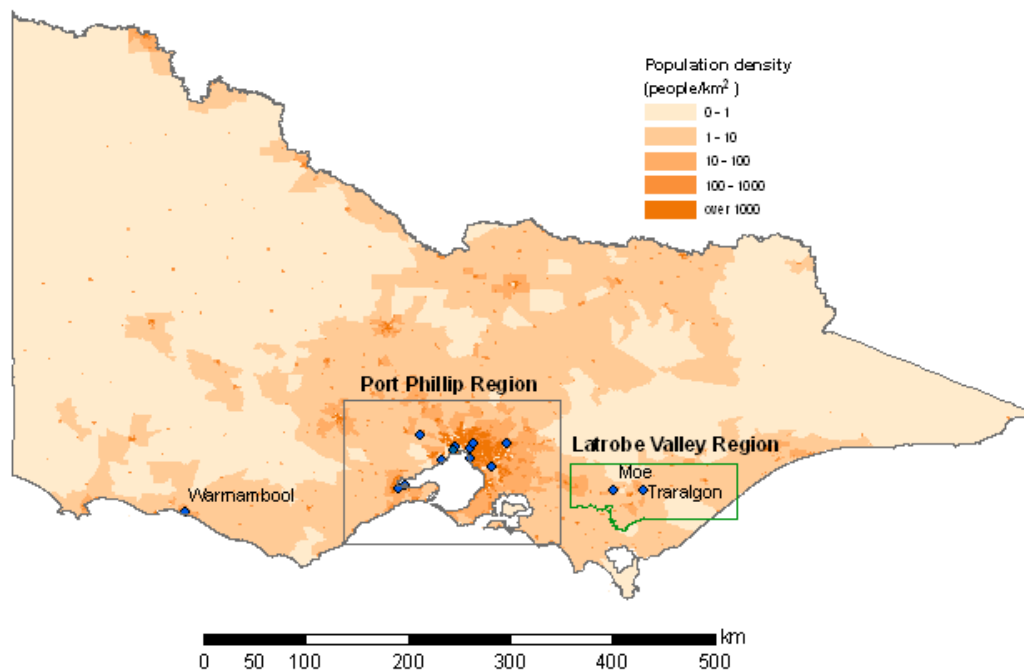


Figure 2: AAQ NEPM regions and population density in Victoria.

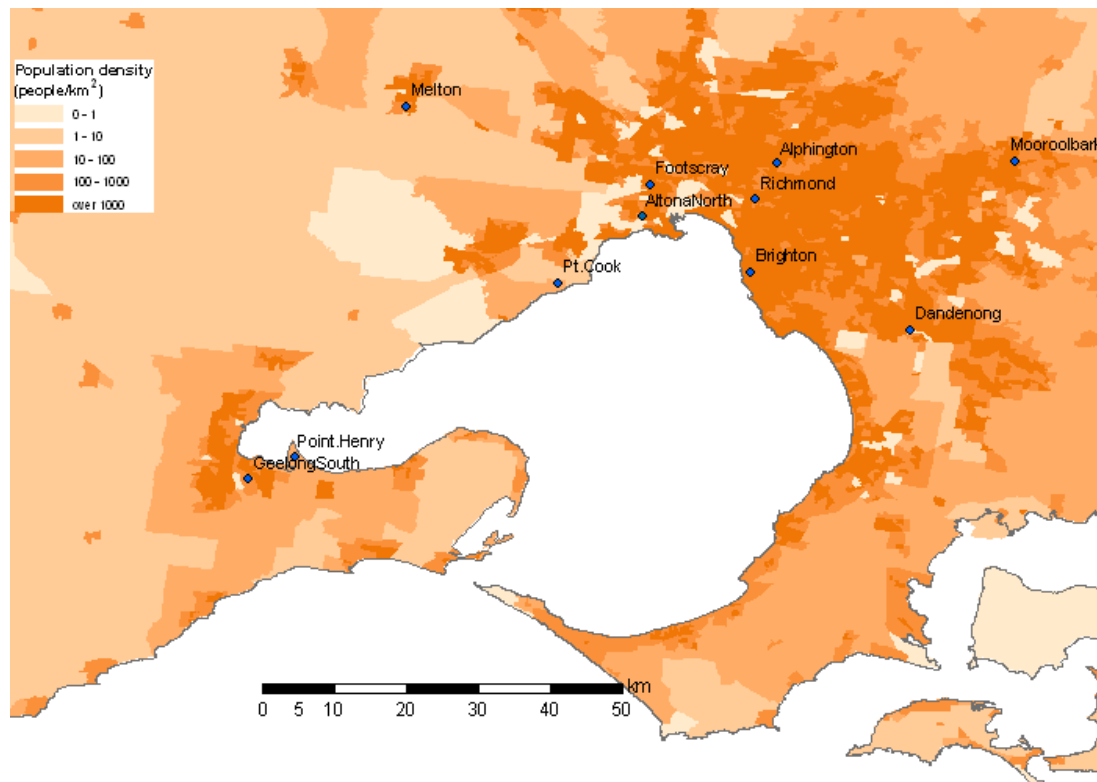


Figure 3: Monitoring stations and population density in Port Phillip region.

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 |
| | PM _{2.5} | AS3580.9.8-2001 ^a | Technical Paper on Monitoring for Particles as PM _{2.5} |

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.

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

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

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).

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 |

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.

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 |
| Point Henry | 364 | 0.101 | Jan 16:14 | 0.078 | Nov 16:15 |
| | | | | | 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 |
| Footscray | 361 | 0.113 | Jan 09:17 | 0.072 | Nov 19:16 |
| Geelong South | 364 | 0.076 | Jan 16:16 | 0.073 | Dec 31:16 |
| Melton | 328 | 0.080 | Jan 09:18 | 0.075 | Nov 19:16 |
| Mooroolbark | 363 | 0.077 | Feb 20:17 | 0.074 | Nov 19:18 |
| Point Cook | 363 | 0.086 | Jan 09:17 | 0.072 | Jan 15:17 |
| Point Henry | 364 | 0.085 | Jan 16:16 | 0.065 | Nov 19:17 |
| | | | | | 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 | |
| 09Jan07 | | | | | | | | | |
| 1h ave | 0.121 | 0.122 | 0.112 | 0.127 | | | | | Bushfire |
| 4h ave | 0.115 | 0.111 | 0.106 | 0.113 | 0.086 | | | | |
| 10Jan07 | | | | | | | | | |
| 1h ave | | | | | | | | | Bushfire |
| 4h ave | | | | | | | 0.089 | 0.082 | |
| 16Jan07 | | | | | | | | | |
| 1h ave | | | | | | 0.101 | | | Bushfire |
| 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.

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 avg)

| 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 Performance monitoring station | Data availability (% of days) | Max (ppm) | Percentiles (ppm) | | | | | | |
|------------------------------------------|----------------------------------|--------------|-------------------|------|------|------|------|------|--|
| | | | 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 | <i>55.1</i> | <i>0</i> | 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 Performance monitoring station | Data availability (% of days) | Max (ppm) | Percentiles (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 |
| <i>1997</i> | <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 |
| <i>2000</i> | <i>68.8</i> | <i>0</i> | <i>0.048</i> | <i>0.043</i> | <i>0.039</i> | <i>0.032</i> | <i>0.028</i> | <i>0.020</i> | <i>0.014</i> |
| 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 | <i>74.8</i> | 0 | <i>0.031</i> | <i>0.028</i> | <i>0.026</i> | <i>0.024</i> | <i>0.022</i> | <i>0.018</i> | <i>0.014</i> |
| 1996 | <i>26.8</i> | 0 | <i>0.027</i> | <i>0.021</i> | <i>0.018</i> | <i>0.016</i> | <i>0.013</i> | <i>0.012</i> | <i>0.009</i> |
| 1997 | <i>69.6</i> | 0 | <i>0.036</i> | <i>0.031</i> | <i>0.031</i> | <i>0.026</i> | <i>0.023</i> | <i>0.020</i> | <i>0.016</i> |
| 1998 | <i>87.9</i> | 0 | <i>0.049</i> | <i>0.036</i> | <i>0.033</i> | <i>0.029</i> | <i>0.026</i> | <i>0.022</i> | <i>0.016</i> |
| 1999 | <i>86.0</i> | 0 | <i>0.049</i> | <i>0.035</i> | <i>0.032</i> | <i>0.028</i> | <i>0.025</i> | <i>0.022</i> | <i>0.017</i> |
| 2000 | <i>73.5</i> | 0 | <i>0.050</i> | <i>0.040</i> | <i>0.036</i> | <i>0.027</i> | <i>0.024</i> | <i>0.020</i> | <i>0.015</i> |
| 2001 | <i>95.1</i> | 0 | <i>0.036</i> | <i>0.028</i> | <i>0.026</i> | <i>0.024</i> | <i>0.022</i> | <i>0.018</i> | <i>0.014</i> |
| 2002 | <i>96.7</i> | 0 | <i>0.036</i> | <i>0.030</i> | <i>0.029</i> | <i>0.027</i> | <i>0.026</i> | <i>0.021</i> | <i>0.014</i> |
| 2003 | <i>98.4</i> | 0 | <i>0.034</i> | <i>0.031</i> | <i>0.029</i> | <i>0.027</i> | <i>0.024</i> | <i>0.020</i> | <i>0.014</i> |
| 2004 | <i>100.0</i> | 0 | <i>0.032</i> | <i>0.026</i> | <i>0.024</i> | <i>0.023</i> | <i>0.021</i> | <i>0.018</i> | <i>0.014</i> |
| 2005 | <i>99.5</i> | 0 | <i>0.039</i> | <i>0.034</i> | <i>0.032</i> | <i>0.027</i> | <i>0.024</i> | <i>0.019</i> | <i>0.014</i> |
| 2006 | <i>81.1</i> | 0 | <i>0.058</i> | <i>0.030</i> | <i>0.029</i> | <i>0.026</i> | <i>0.024</i> | <i>0.020</i> | <i>0.016</i> |
| 2007 | <i>98.4</i> | 0 | <i>0.032</i> | <i>0.028</i> | <i>0.027</i> | <i>0.024</i> | <i>0.022</i> | <i>0.019</i> | <i>0.014</i> |

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 | <i>64.7</i> | 0 | <i>0.038</i> | <i>0.037</i> | <i>0.034</i> | <i>0.031</i> | <i>0.028</i> | <i>0.024</i> | <i>0.018</i> |
| 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 Performance monitoring station | Data availability (% of days) | Max (ppm) | Percentiles (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 Performance monitoring station | Data availability (% of days) | Max (ppm) | Percentiles (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 | <i>0.0</i> | | | | | | | | |
| 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 | <i>14.2</i> | | <i>0.076</i> | <i>0.069</i> | <i>0.062</i> | <i>0.060</i> | <i>0.048</i> | <i>0.036</i> | <i>0.029</i> |
| 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 | <i>57.5</i> | <i>0</i> | <i>0.089</i> | <i>0.070</i> | <i>0.055</i> | <i>0.046</i> | <i>0.038</i> | <i>0.033</i> | <i>0.028</i> |
| 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 | <i>0.0</i> | | | | | | | | |
| 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 | <i>14.5</i> | | | | | | | | |
| 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 | <i>57.5</i> | 0 | <i>0.075</i> | <i>0.063</i> | <i>0.047</i> | <i>0.041</i> | <i>0.036</i> | <i>0.030</i> | <i>0.026</i> |
| 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 | <i>60.5</i> | <i>0</i> | <i>0.064</i> | <i>0.055</i> | <i>0.051</i> | <i>0.045</i> | <i>0.039</i> | <i>0.029</i> | <i>0.024</i> |
| 1998 | 92.1 | 0 | 0.058 | 0.053 | 0.048 | 0.041 | 0.035 | 0.029 | 0.024 |
| 1999 | <i>31.8</i> | <i>0</i> | <i>0.053</i> | <i>0.051</i> | <i>0.044</i> | <i>0.040</i> | <i>0.033</i> | <i>0.026</i> | <i>0.021</i> |
| 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 Performance monitoring station | Data availability (% of days) | Max (ppm) | Percentiles (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 Performance monitoring station | Data availability (% of days) | Max (ppm) | Percentiles (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 (% of days) | No. of exceedences (days) | Max (ppm) | Percentiles (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 | <i>0.0</i> | | | | | | | | |
| 1998 | <i>68.8</i> | <i>0</i> | <i>0.038</i> | <i>0.023</i> | <i>0.021</i> | <i>0.016</i> | <i>0.012</i> | <i>0.008</i> | <i>0.003</i> |
| 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 | <i>50.7</i> | <i>0</i> | <i>0.037</i> | <i>0.024</i> | <i>0.023</i> | <i>0.018</i> | <i>0.012</i> | <i>0.006</i> | <i>0.002</i> |
| 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 | 75 th | 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 | 68.8 | 0 | 0.006 | 0.004 | 0.004 | 0.003 | 0.002 | 0.001 | 0.001 |
| 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 | 50.7 | 0 | 0.006 | 0.005 | 0.003 | 0.002 | 0.001 | 0.000 | -0.001 |
| 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 | <i>2.7</i> | | | | | | | | |
| 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 | <i>0.0</i> | | | | | | | | |

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 |
| <i>1996</i> | <i>5.5</i> | | | | | | | | |
| 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) | | | | | | |
|--------------------------------|----------------------------------|-----------------------------|----------------------------------|------|------|------|------|------|--|
| | | | 99th | 98th | 95th | 90th | 75th | 50th | |
| Performance monitoring station | | | | | | | | | |
| 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) | | | | | | |
|--------------------------------|----------------------------------|-----------------------------|----------------------------------|------|------|------|------|------|--|
| | | | 99th | 98th | 95th | 90th | 75th | 50th | |
| Performance monitoring station | | | | | | | | | |
| 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 ($\mu\text{g}/\text{m}^3$) | Percentiles ($\mu\text{g}/\text{m}^3$) | | | | | |
|-------------|----------------------------------|-------------------------------------|------------------------------------------|------|------|------|------|------|
| | | | 99th | 98th | 95th | 90th | 75th | 50th |
| <i>2003</i> | <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.