National Environment Protection (Ambient Air Quality) Measure

as amended

made under section 20 of the

National Environment Protection Council Act 1994 (Cwlth), *National Environment Protection Council (New South Wales) Act 1995* (NSW), *National Environment Protection Council (Victoria) Act 1995 (*Vic), *National Environment Protection Council (Queensland) Act 1994* (*Qld)*, *National Environment Protection Council (Western Australia) Act 1996* (WA), *National Environment Protection Council (South Australia) Act 1995* (SA), *National Environment Protection Council (Tasmania) Act 1995 (*Tas), *National Environment Protection Council Act 1994 (*ACT) and the *National Environment Protection Council (Northern Territory) Act 1994* (NT)

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taking into account amendments up to Variation 2015

Prepared by the Department of the Environment.

Page

Contents

Introductory Note

Section 14 of the *National Environment Protection Council Act 1994* and the equivalent provision of the corresponding Act of each participating State and Territory provides for the making of measures by the National Environment Protection Council and the matters to which they may relate. This Measure relates to ambient air quality (section 14 (1) (a)).

The Measure is to be implemented by the laws and other arrangements participating jurisdictions consider necessary: see section 7 of the Commonwealth Act and the equivalent provision of the corresponding Act of each participating State and Territory.

Part 1 Preliminary

1 Citation [see Note 1]

This Measure may be cited as the National Environment Protection (Ambient Air Quality) Measure.

2 Definitions

(1) This clause defines particular words and expressions used in this Measure.

(2) The words and expressions indicated by an asterisk are defined in the Commonwealth Act and are included for information only to assist readers of the Measure. Minor changes from the definitions in the Commonwealth Act are indicated by square brackets ([ ]).

(3) In this Measure:

***Agreement** means the agreement made on 1 May 1992 between the Commonwealth, the States, the Australian Capital Territory, the Northern Territory and the Australian Local Government Association, a copy of which is set out in the Schedule [to the Commonwealth Act].

ambient air means the external air environment, it does not include the air environment inside buildings or structures.

Commonwealth Act means the *National Environment Protection Council Act 1994* of the Commonwealth.

Continuous direct mass measurement technique means a method for continuously monitoring suspended particulate matter changes of particles in ambient air, providing near real time measurement of mean particle concentration.

Council means the National Environment Protection Council established by section 8 of the Commonwealth Act and the equivalent provision of the corresponding Act of each participating State and Territory.

Exceptional event means a fire or dust occurrence that adversely affects air quality at a particular location, and causes an exceedance of 1 day average standards in excess of normal historical fluctuations and background levels, and is directly related to: bushfire; jurisdiction authorised hazard reduction burning; or continental scale windblown dust.

Fire management means all activities associated with the management of fire prone land, including the use of fire to meet land management goals and objectives.

Manual gravimetric method means a manual method for sampling particles by drawing air through a filter and determining the mass by weighing the filters.

monitoring station means a facility for measuring the concentration of one or more pollutants in the ambient air in a region or sub-region.

****national environment protection goal*** means a goal:

(a) that relates to desired environmental outcomes; and

(b) that guides the formulation of strategies for the management of human activities that may affect the environment.

****national environment protection protocol*** means a protocol that relates to the process to be followed in measuring environmental characteristics to determine:

(a) whether a particular standard or goal is being met or achieved; or

(b) the extent of the difference between the measured characteristic of the environment and a particular standard or a particular goal.

****national environment protection standard*** means a standard that consists of quantifiable characteristics of the environment against which environmental quality can be assessed.

****participating jurisdiction*** means the Commonwealth, a participating State or a participating Territory.

****participating State*** means a State:

(a) that is a party to the Agreement; and

(b) in which an Act that corresponds to [the Commonwealth] Act is in force in accordance with the Agreement.

****participating Territory*** means a Territory:

(a) that is a party to the Agreement; and

(b) in which an Act that corresponds to [the Commonwealth] Act is in force in accordance with the Agreement.

particles as PM_{10} means particulate matter with an equivalent aerodynamic diameter of 10 micrometres or less.

Particles as $PM_{2.5}$ means particulate matter with an equivalent aerodynamic diameter of 2.5 micrometres or less.

performance monitoring station means a monitoring station used to measure achievement against the goal.

pollutant means a pollutant mentioned in Schedule 1.

ppm means parts per million by volume.

principal Measure means the National Environment Protection (Ambient Air Quality) Measure.

Reference method means the monitoring method used for collection of data that can be compared to the Advisory Reporting Standards.

region means an area within a boundary surrounding population centres as determined by the relevant participating jurisdiction.

sub-region means a populated area within a region whose air quality differs from other areas in the region due to the topography, meteorology and sources of pollutants.

TEOM means tapered element oscillating microbalance.

µg/m^3 means microgram per cubic metre referenced to a temperature of 0 degrees Celsius and an absolute pressure of 101.325 kilopascals.

3 Application

Participating jurisdictions must:

(a) for carbon monoxide, nitrogen dioxide, photochemical oxidants (as ozone), sulfur dioxide, lead, particles as $PM_{2.5}$ and particles as PM_{10}, monitor, assess and report in accordance with the protocol in this Measure.

Part 2 National environment protection goal

4 Purpose of Part

The purpose of this Part is to set out a goal:

(a) that relates to the desired environmental outcomes; and

(b) that guides the formulation of strategies for the management of human activities that may affect the environment.

5 Desired environmental outcome

The desired environmental outcome of this Measure is ambient air quality that allows for the adequate protection of human health and well-being.

6 National Environment Protection Goal

The national environment protection goals of this Measure are:

(a) for carbon monoxide, nitrogen dioxide, photochemical oxidants (as ozone), sulfur dioxide, lead and particles (as PM_{10} and $PM_{2.5}$) to achieve the National Environment Protection Standards as assessed in accordance with the monitoring protocol (Part 4) to the extent specified in Schedule 2 table 1; and

(b) for particles as $PM_{2.5}$, to achieve by 2025 further reductions in maximum concentrations to the extent specified in Schedule 2 table 2 .

Part 3 National environment protection standards

7 Purpose of Part

The purpose of this Part is to set standards that consist of quantifiable characteristics of the air against which ambient air quality can be assessed.

8 National environment protection standards

(1) The national environment protection standards of this Measure are the standards set out in Schedule 2.

(2) For each pollutant mentioned in table 1 of Schedule 2, the standard for an averaging period mentioned in the Schedule is the concentration in column 4 of table 1 of Schedule 2.

Part 4 National environment protection protocol

9 Purpose of Part

The purpose of this Part is to set out the processes to be followed in measuring the concentration of pollutants in the air to determine:

(a) whether the standards of this Measure are being met; or

(b) the extent of the difference between the measured concentration of pollutants in the air and the standards.

10 Monitoring plans

(1) Each participating jurisdiction must ensure that a monitoring plan consistent with this Part is prepared setting out how the jurisdiction proposes to monitor air quality for the purposes of this Measure.

(2) Each monitoring plan must be submitted to Council.

11 Methods of measuring and assessing concentration of pollutants

For the purpose of evaluating performance against the standards the concentration of pollutants in the air:

(a) is to be measured at performance monitoring stations; or

Note Because the concentrations of different pollutants vary across a region, it would not be necessary or appropriate to co-locate the measuring instrumentation for all pollutants at each performance monitoring station.

(b) is to be assessed by other means that provide information equivalent to measurements which would otherwise occur at a performance monitoring station.

Note These methods could include, for example, the use of emission inventories, windfield and dispersion modelling, and comparisons with other regions.

12 Accreditation of performance monitoring

(1) Subject to subclause (2) the operator of a performance monitoring station must be accredited by the National Association of Testing Authorities.

(2) The operator may apply an equivalent system for ensuring adequate monitoring, quality assurance, and validation procedures.

13 Location of performance monitoring stations

(1) To the extent practicable, performance monitoring stations should be sited in accordance with the requirements for Australian Standard AS/NZS 3580.1.1:2007 (Methods for sampling and analysis of ambient air – Guide

to siting air monitoring equipment). Any variations from AS/NZS 3580.1.1:2007 must be notified to Council for use in assessing reports.

(2) Performance monitoring station(s) must be located in a manner such that they contribute to obtaining a representative measure of the air quality likely to be experienced by the general population in the region or sub-region.

(3) A performance monitoring station should be operated in the same location for at least 5 years unless the integrity of the measurements is affected by unforeseen circumstances.

14 Number of performance monitoring stations

(1) Subject to subclauses (2) and (3) below, the number of performance monitoring stations for a region with a population of 25,000 people or more must be the next whole number above the number calculated in accordance with the formula:

$$1.5P + 0.5$$

where ***P*** is the population of the region (in millions).

(2) Additional performance monitoring stations may be needed where pollutant levels are influenced by local characteristics such as topography, weather or emission sources.

(3) Fewer performance monitoring stations may be needed where it can be demonstrated that pollutant levels are reasonably expected to be consistently lower than the standards mentioned in this Measure.

15 Trend stations

(1) A number of performance monitoring stations in each participating State and participating Territory must be nominated as trend stations.

(2) The number of performance monitoring stations to be nominated as trend stations must be sufficient to monitor and assess long term changes in ambient air quality in different parts of the jurisdiction.

(3) A trend station must be operated in the same location for one or more decades.

16 Monitoring methods

(1) Subject to subclauses (2) and (3) the Australian Standard Methods set out in Schedule 3 should be used for monitoring pollutants in the air.

(2) Where an Australian Standard Method has not yet been developed for a monitoring method, appropriate internationally recognised methods or standards may be used that provide equivalent information for assessment purposes.

(3) Other monitoring methods may be used if:

(a) calibration and validation studies show:

(i) the accuracy and precision of the other method; and

(ii) the method can be compared with the relevant Australian Standard Method; and

(b) the equipment used is calibrated to the standard required by the equipment manufacturer*;* and

(c) the equipment provides equivalent information for assessment purposes.

17 Evaluation of performance against standards and goal

(1) Each participating jurisdiction must evaluate its annual performance as set out in this clause.

(2) For each performance monitoring station in the jurisdiction or assessment in accordance with subclause 11(b) there must be:

(a) a determination of the exposed population in the region or sub-region represented by the station; and

(b) an evaluation of performance against the standards and goal of this Measure, other than in relation to table 2 of Schedule 2, as:

(i) meeting; or

(ii) not meeting; or

(iii) not demonstrated.

(2A) Each participating jurisdiction must evaluate and report population exposures to particles as $PM_{2.5}$ annually from June 2018.

Note To ensure national consistency, evaluation and reporting shall be undertaken in accordance with any procedures or methods agreed by participating jurisdictions.

(3) Jurisdictions may provide an evaluation of a region as a whole against the standards using appropriate methodologies that provide equivalent information for assessment purposes.

(4) Performance must be evaluated as 'not demonstrated' if there has been no monitoring or no assessment by an approved alternative method as provided in clause (11).

18 Reporting

(1) Each participating jurisdiction must submit a report on its compliance with the Measure, other than in relation to table 2 of Schedule 2, in an approved form to Council by the 30 June next following each reporting year.

(2) In this clause ***reporting year*** means a year ending on 31 December.

The report must include:

(a) the evaluations and assessments mentioned in clause 17; and

(b) an analysis of the extent to which the standards of this Measure are, or are not, met in the jurisdiction; and

(c) a statement of the progress made towards achieving the goal.

(3) The description of the circumstances which led to exceedences, including the influence of natural events and fire management, must be reported to the extent that such information can be determined.

(3A) When reporting against PM_{10} and $PM_{2.5}$ 1 day average standards jurisdictions will report all measured data, including monitoring data that is directly associated with an exceptional event, and identify and describe any exceptional event.

(3B) Jurisdictions are to maintain and make available records relating to the determination of exceptional events.

(3C) For the purpose of reporting compliance against PM_{10} and $PM_{2.5}$ 1 day average standards, jurisdictions shall exclude monitoring data that has been determined as being directly associated with an exceptional event.

(3D) For the purpose of reporting compliance against PM_{10} and $PM_{2.5}$ 1 year average standards, jurisdictions shall include all measured data, including monitoring data that is directly associated with an exceptional event.

Note To ensure national consistency, all reporting or record-keeping referred to in subclauses 18(3A), (3B), (3C) or (3D) shall be undertaken in accordance with any procedures or methods agreed by participating jurisdictions.

(4) A report for a pollutant must include the percentage of data available in the reporting period.

Schedule 1 Pollutants

Carbon monoxide
Nitrogen dioxide
Photochemical Oxidants (as Ozone)
Sulfur dioxide
Lead
Particles (as PM_{10} and $PM_{2.5}$)

Schedule 2 Standards and Goal

Table 1: Standards for Pollutants

Column 1 Item	Column 2 Pollutant	Column 3 Averaging period	Column 4 Maximum concentration standard	Column 5 Maximum allowable exceedances
1	Carbon monoxide	8 hours	9.0 ppm	1 day a year
2	Nitrogen dioxide	1 hour 1 year	0.12 ppm 0.03 ppm	1 day a year None
3	Photochemical oxidants (as ozone)	1 hour 4 hours	0.10 ppm 0.08 ppm	1 day a year 1 day a year
4	Sulfur dioxide	1 hour 1 day 1 year	0.20 ppm 0.08 ppm 0.02 ppm	1 day a year 1 day a year None
5	Lead	1 year	0.50 $\mu g/m^3$	None
6	Particles as PM_{10}	1 day 1 year	50 $\mu g/m^3$ 25 $\mu g/m^3$	None None
7	Particles as $PM_{2.5}$	1 day 1 year	25 $\mu g/m^3$ 8 $\mu g/m^3$	None None

Table 2: Goal for Particles as $PM_{2.5}$ by 2025

Column 1 Pollutant	Column 2 Averaging period	Column 3 Maximum concentration
Particles as $PM_{2.5}$	1 day 1 year	20 μg/m^3 by 2025 7 μg/m^3 by 2025

For the purposes of this Measure the following definitions shall apply:

(1) Lead sampling must be carried out for a period of 24 hours at least every sixth day.

(2) Measurement of lead must be carried out on Total Suspended Particles (TSP) or its equivalent.

(3) In Column 3 of table 1 and Column 2 of table 2 of Schedule 2, the averaging periods are defined as follows:

- 1 hour clock hour average
- 4 hour rolling 4 hour average based on 1 hour averages
- 8 hour rolling 8 hour average based on 1 hour averages
- 1 day calendar day average
- 1 year calendar year average

(4) In Column 5 of table 1 of Schedule 2, the time periods are defined as follows:

- day exceeded calendar day during which the associated standard is
- year calendar year.

(5) All averaging periods of 8 hours or less must be referenced by the end time of the averaging period. This determines the calendar day to which the averaging periods are assigned.

(6) For the purposes of calculating and reporting 4 and 8 hour averages, the first rolling average in a calendar day ends at 1.00 am, and includes hours from the previous calendar day.

(7) The concentrations in Column 4 of table 1 and Column 3 of table 2 of Schedule 2 are the arithmetic mean concentrations.

Schedule 3 Australian Standards Methods for Pollutant Monitoring

Pollutant	Method title	Method number
Carbon monoxide	Determination of Carbon Monoxide-Direct Reading Instrumental Method	AS/NZS 3580.7.1-2011/Amdt 1-2012
Nitrogen dioxide	Determination of Oxides of Nitrogen-Chemiluminescence Method	AS/NZS 3580.5.1-2011
Photochemical oxidants (as ozone)	Determination of Ozone-Direct Reading Instrumental Method	AS/NZS 3580.6.1-2011
Sulfur dioxide	Determination of Sulfur Dioxide-Direct Reading Instrumental Method	AS/NZS 3580.4.1-2008
Lead	Determination of Suspended Particulate Matter – Particulate metals high or low volume sampler gravimetric collection – Inductively coupled plasma (ICP) spectrometric method	AS/NZS 3580.9.15:2014
	Determination of Suspended Particulate Matter – Total suspended particulate matter (TSP) - High volume sampler gravimetric method	AS/NZS 3580.9.3:2015
Particles as PM_{10}	Determination of Suspended Particulate Matter-PM_{10} High Volume Sampler with Size Selective Inlet-Gravimetric Method	AS/NZS 3580.9.6:2003
	Determination of Suspended Particulate Matter-Dichotomous sampler ($PM_{10,}$ coarse PM and $PM_{2.5)}$ – Gravimetric method	AS/NZS 3580.9.7:2009
	Determination of Suspended Particulate Matter-PM_{10} continuous direct mass method using tapered element oscillating microbalance analyser.	AS/NZS 3580.9.8-2008
	Determination of Suspended Particulate Matter-PM_{10} Low Volume Sampler-Gravimetric Method	AS/NZS 3580.9.9:2006
	Determination of Suspended Particulate Matter-PM_{10} beta attenuation monitors	AS/NZS 3580.9.11:2008/Amdt 1 :2009
Particles as $PM_{2.5}$	Determination of Suspended Particulate Matter-$PM_{2.5}$ low volume sampler-Gravimetric Method	AS/NZS 3580.9.10:2008
	Determination of Suspended Particulate Matter-$PM_{2.5}$ beta attenuation monitors	AS/NZS 3580.9.12:2013
	Determination of Suspended Particulate Matter-$PM_{2.5}$ continuous direct mass method using a tapered element oscillating microbalance monitor	AS/NZS 3580.9.13:2013
	Determination of Suspended Particulate Matter-$PM_{2.5}$ high volume sampler with size selective inlet – Gravimetric Method	AS/NZS 3580.9.14:2013

Notes to the National Environment Protection (Ambient Air Quality) Measure

Note 1

The National Environment Protection (Ambient Air Quality) Measure (in force under section 20 of the *National Environment Protection Council Act 1994* (Cwlth), *National Environment Protection Council (New South Wales) Act 1995* (NSW), *National Environment Protection Council (Victoria) Act 1995* (Vic), *National Environment Protection Council (Queensland) Act 1994* (Qld), *National Environment Protection Council (Western Australia) Act 1996* (WA), *National Environment Protection Council (South Australia) Act 1995* (SA), *National Environment Protection Council (Tasmania) Act 1995* (Tas), *National Environment Protection Council Act 1994* (ACT) and the *National Environment Protection Council (Northern Territory) Act 1994* (NT)) as shown in this compilation is amended as indicated in the Tables below.

Table of Instruments

Title	Date of notification in *Gazette*/registration	Date of commencement	Application, saving or transitional provisions
National Environment Protection (Ambient Air Quality) Measure	8 July 1998 (*see* c. 1 and *Gazette* 1998, No. GN27)	8 July 1998	
National Environment Protection (Ambient Air Quality) Measure Variation, 2003	2 June2003 (*see* c. 1 and *Gazette* 2003, No. S190)	2 June 2003	—
National Environment Protection (Ambient Air Quality) Measure Variation, 2015	3 February 2016	3 February 2016	

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 2	am. Variation 2003; am. Variation 2015
s. 3	am. Variation 2003; rs. Variation 2015
s. 6	am. Variation 2003; rs. Variation 2015
s. 8	am. Variation 2003; am. Variation 2015
s.13	am. Variation 2015
s.17	am. Variation 2015
s.18	am. Variation 2015
Schedule 1	rs. Variation 2015
Schedule 2	am. Variation 2003; rs. Variation 2015
Schedule 3	rs. Variation 2015
Schedule 4	ad. Variation 2003; rep. Variation 2015
Schedule 5	ad. Variation 2003; rep. Variation 2015