



Fact sheet

Air quality monitoring in Western Australia

Purpose

The purpose of this fact sheet is to provide information on air quality monitoring undertaken by the Department of Water and Environmental Regulation (the department) in Western Australia (WA).

Introduction

Air quality monitoring is undertaken by the department at selected regional and metropolitan locations in WA in accordance with the [National Environment Protection \(Ambient Air Quality\) Measure](#) (AAQ NEPM).

We are responsible for the operation and maintenance of 15 air quality monitoring sites in WA. This includes sites in the Perth and Peel regions at Armadale, Caversham, Duncraig, Quinns Rocks, Rolling Green, Rockingham, South Lake, Swanbourne and Mandurah. Regional sites are located at Albany, Bunbury, Busselton, Collie, Geraldton and Kalgoorlie.

Key points - air quality in Western Australia

- Air quality in WA is considered good on most days, although some poor air quality events occur in any given year.
- Poor air quality events have been primarily attributed to fire hazard reduction burns or bushfires.
- Monitoring will continue in accordance with the AAQ NEPM as the national standard.

What is monitored?

Air quality pollutants monitored in WA include:

- carbon monoxide – a gas found in air that is harmful to humans with the main source being

attributed to motor vehicles and industrial activities

- photochemical oxidants (as ozone) – the principal component of a mixture of air pollutants commonly known as ‘photochemical smog’. It is harmful to humans and is formed through a complex reaction between sunlight and air pollutants (volatile organic compounds and nitrogen oxides). Sources of air pollutants are industrial activities, motor vehicles and bushfires
- nitrogen dioxide – a gas found in air that contributes to ‘photochemical smog’, which is harmful to humans. Sources include motor vehicles and industrial activities
- sulfur dioxide – a gas found in air that reacts to form compounds such as sulfuric acid, sulfurous acid and sulfate particles that are harmful to humans. Sources include industrial activities and the processing of some mineral ores that contain sulfur
- particle matter (as PM₁₀ and PM_{2.5}) found in air that is less than 10 micrometres in diameter (PM₁₀) and less than 2.5 micrometres in diameter (PM_{2.5}). The small particles are harmful to humans and can be attributed to industrial activities as well as natural sources such as bushfires, dust storms, marine aerosols and pollen.

Lead is no longer monitored by the department network. This is because lead levels have been very low since leaded petrol was phased out in 2001.

Monitoring data collected at the department sites are available on the department’s [website](#).

Air quality standards

The AAQ NEPM provides standards for pollutants. Table 1 details the air pollutants and the current maximum concentration standards used to assess ambient air quality to protect human health and wellbeing.

In May 2021, the AAQ NEPM was varied to:

- establish an ozone (O₃) standard with an eight-hour averaging period that reflects the health evidence and its use internationally, with a numerical value of 65 ppb
- strengthen nitrogen dioxide (NO₂) reporting standards for one-hour and annual averaged NO₂ to 80 ppb and 15 ppb respectively, bringing forward standards initially proposed for 2025. This reflects the most recent health evidence emerging about the health impacts of NO₂
- strengthen sulfur dioxide (SO₂) reporting standards for one-hour and one-day averaged SO₂ to 100 ppb and 20 ppb respectively. The one-hour averaged SO₂ standard will be strengthened again in 2025 to 75 ppb
- remove annual SO₂ and one-hour and four-hour O₃ averaging periods to align the standards with the recent health evidence and for consistency with many international agencies
- change the form of the standards to the maximum value with no allowable exceedances
- extend the application of the existing exceptional events rule, that applied to the particle standards, to O₃ given the linkages between elevated O₃ levels and fire events. This rule is used by jurisdictions to determine compliance with the standards
- extend the range of pollutants used for annual reporting of population exposure to include PM_{2.5}, O₃ and NO₂ given the widespread exposure across whole populations
- strengthen the daily PM_{2.5} standard in 2025 to 20 µg/m³ and the annual standard to 7 µg/m³.

Table 1 Air quality standards

| Pollutant | Averaging period | Maximum concentration* |
|---|------------------|------------------------|
| Carbon monoxide | 8 hours | 9.0 ppm |
| Nitrogen dioxide | 1 hour | 0.08 ppm |
| | 1 year | 0.015 ppm |
| Photochemical oxidants (as ozone) | 8 hours | 0.065 ppm |
| Sulfur dioxide | 1 hour | 0.10 ppm |
| | 1 day | 0.02 ppm |
| Particulate matter as PM ₁₀ | 1 day | 50 µg/m ³ |
| | 1 year | 25 µg/m ³ |
| Particulate matter as PM _{2.5} | 1 day | 25 µg/m ³ |
| | 1 year | 8 µg/m ³ |

* ppm = parts per million; µg/m³ = micrograms per cubic metre

Particles explained

Airborne particles are commonly classified by size in terms of their equivalent aerodynamic diameter (EAD). An EAD is the diameter of a spherical particle of density 1 gram per cubic centimetre (the same density as water) that exhibits the same aerodynamic behaviour as the particle in question. Particles are sampled and described on the basis of their EAD but are usually simply called the particle size.

PM₁₀ particles are any substances that have an EAD less than or equal to 10 micrometres in diameter. PM_{2.5} are any substances that have an EAD less than or equal to 2.5 micrometres in diameter. Particles in this size range make up a large portion of dust that can be drawn into the lungs. Larger particles tend to be trapped in the nose, mouth or throat.

The important thing to note is that PM₁₀ and PM_{2.5} is not one specific substance, but simply a classification of particle or dust size.

More information

For advice on air quality or related matters, please contact info@dwer.wa.gov.au.

Related documents

The latest [WA air monitoring reports](#) contain detailed air quality data for the Perth and Peel regions.

Legislation

This document is provided for guidance only. It should not be relied on to address every aspect of the relevant legislation. Please refer to the Western Australian Legislation website at www.legislation.wa.gov.au for copies of the relevant legislation.