

Nitrogen dioxide (NO₂)



Liveability | Air quality

South Australia's environmental trend and condition report cards 2023



STATE

Trend

Ambient levels of nitrogen dioxide (NO₂) in South Australia have been stable since 2007 at most sites.

This assessment is of annual average levels of ambient NO₂ measured at 7 air quality monitoring stations around metropolitan Adelaide (top figure). Not all stations were active for the entire assessment period.

Current monitoring of ambient NO₂ is only focused on metropolitan Adelaide, as previous monitoring in other parts of South Australia (including Gawler, Mount Gambier, Port Pirie and Whyalla) showed lower levels of NO₂ than metropolitan Adelaide.

NO₂ levels have generally been low and stable since 2007. One exception is the Adelaide CBD, where levels have been decreasing.

NO₂ levels and their effect on air quality vary based on the presence of emission sources, weather conditions and local topography. These account for long-term variability between monitoring sites and short-term variability at any given location.

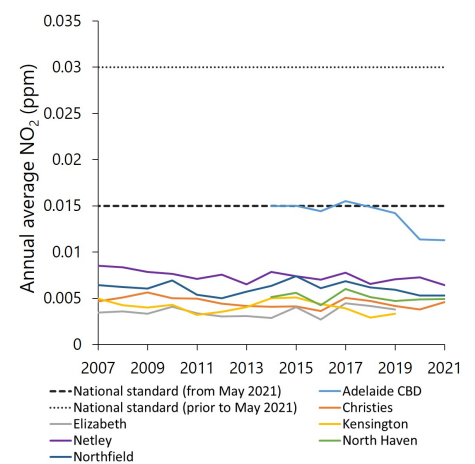
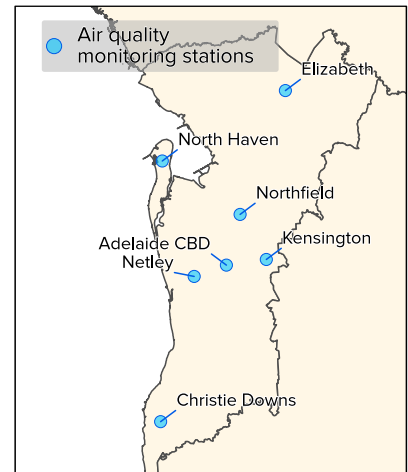
Condition

Air quality in South Australia is rated as good based on measured levels of ambient NO₂. These levels meet the national standard.

In 2021, annual average levels of ambient NO₂ ranged from 0.005 to 0.011 parts per million (ppm), which meets Australia's national standard of 0.015 ppm (bottom figure). NO₂ levels measured at the Adelaide CBD station tend to be higher than at the other sites. This is due to the station's proximity to roads and traffic emissions.

The national standards for NO₂ were updated in 2021 and the annual standard was revised to 0.015 ppm.

Annual average levels of nitrogen dioxide in South Australia are stable and meet the national standard.



Why is managing nitrogen dioxide important?

NO₂ is an air pollutant that can affect human health. Effects include increased risk of respiratory infections in children, aggravation of asthma, and increased mortality and hospital admissions for respiratory diseases.

Nitrogen oxides are precursors in the formation of ozone and photochemical smog and can form secondary particles that also cause respiratory problems. Environmental effects of NO₂ include toxicity for some plants and reduction of plant growth.

What are the pressures?

High temperature combustion of fossil fuels causes atmospheric nitrogen to react with oxygen in the air to produce nitrogen oxides, which are mainly a mix of nitrogen dioxide and nitric oxide. Nitrogen oxides may also result from combustion of nitrogen compounds in some fuels.

Vehicles, industries that burn fossil fuels (e.g. power stations, those with industrial boilers), and domestic activities (e.g. wood burning) are common sources of NO₂.

What is being done?

Australia has national standards for NO₂, which were strengthened in 2021 to reflect current health knowledge. Vehicle emission limits in the Australian Design Rules continue to play a role in reducing NO₂ emissions from vehicles. The Government of South Australia is also promoting alternative modes of transport such as cycling, public transport and low emission vehicles.

The Environment Protection Authority regulates industry, provides advice as part of the state planning assessment process, and monitors ambient levels of NO₂ in metropolitan Adelaide.

For further information see: [technical information](#)



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Government of South Australia