Sulfur dioxide (SO_2)

Liveability | Air quality

South Australia's environmental trend and condition report cards 2023

Trend
Getting better

Condition
Very good

Reliability
Very good

STATE

Trend

Annual average levels of ambient sulfur dioxide (SO_2) in Port Pirie have been decreasing in recent years.

This assessment is of annual average level of ambient SO_2 measured at one air quality monitoring station in Port Pirie (top figure). Emissions from the Port Pirie smelter contribute to elevated levels of SO_2.

Annual average levels of SO_2 have been variable at the Port Pirie Oliver Street air quality monitoring station over the assessment period (2007 to 2021), but have generally decreased since 2016 (bottom figure).

Improvements in recent years are the result of new technology that was installed at the smelter as part of the Port Pirie Smelter Transformation.

SO_2 is generally not a concern in most regions of South Australia. Monitoring of SO_2 in metropolitan Adelaide has showed ambient levels are consistently very low and easily meet the national standard.

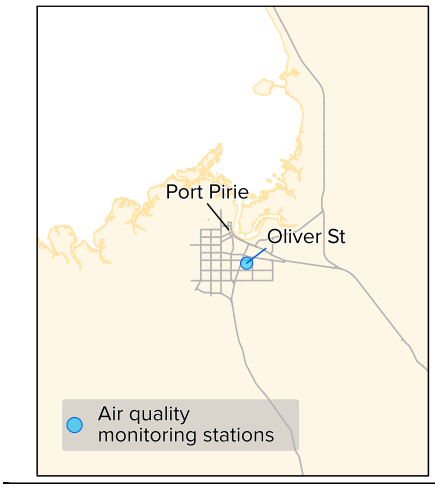
Condition

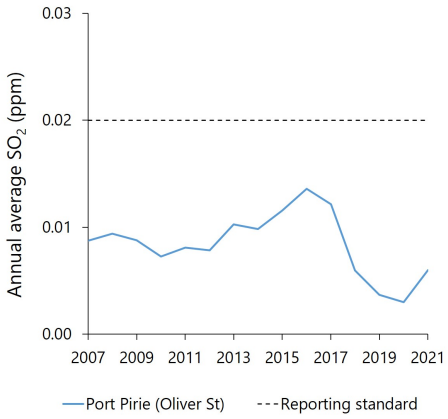
Air quality is rated as very good based on measured levels of ambient SO_2. These levels meet the reporting standard.

Emissions and air quality impacts from the smelter are managed using state-based legislation, and environmental authorisation (licencing). Conditions of licence require monitoring and reporting against 1-hour, 24-hour and annual standards. This includes an annual reporting standard of 0.02 parts per million (ppm), equivalent to Australia's national standard (until May 2021).

In 2021, the annual average level of SO_2 in Port Pirie was 0.006 ppm, which is less than half the reporting standard of 0.02 ppm (bottom figure). However, on numerous occasions, levels were elevated for short periods.

Sulfur dioxide levels in Port Pirie have reduced in recent years and meet the reporting standard.





Why is managing sulfur dioxide important?

SO_2 is an air pollutant that can be harmful to human health and the environment.

Exposure to SO_2 can affect the respiratory system, and can irritate the nose, throat and lungs. People with asthma and other respiratory conditions are most at risk. SO_2 also forms secondary particles, contributing to fine particle levels, which also have health impacts.

Environmental effects can include damage to plants, such as impacts to foliage and reduced growth rates.

What are the pressures?

Industries that process sulfur-containing compounds or burn fuels containing sulfur are the main sources of ambient SO_2. These include smelters, oil refineries, and shipping.

In South Australia, a significant source of SO_2 emissions is the Port Pirie smelter.

What is being done?

Australia has national standards for SO_2, which were strengthened in 2021 as part of a variation to the National Environment Protection (Ambient Air Quality) Measure (AAQ NEPM). The annual standard was removed from the AAQ NEPM in 2021.

The Environment Protection Authority monitors ambient SO_2 levels, regulates SO_2 emissions from industry and ensures that air quality impacts are addressed within the planning system. Australian Government legislation has also been an important driver in reducing SO_2 emissions through the management of fuel quality and emissions from shipping.

For further information see: technical information

Government of South Australia