

Key points

- Air pollution can be an issue in Christchurch, mainly during the coldest months.
- PM₁₀, PM_{2.5}, NO₂, SO₂, CO, benzene and BaP have been measured.
- Monitoring sites are currently located in St Albans, Woolston and Riccarton. Historical monitoring has occurred at other sites*.
- Monitoring sites are influenced by different pollutant sources. St Albans is a residential area, there are several industries in Woolston, and Riccarton Rd is a busy, congested road.
- Pollutants mainly from motor vehicles include benzene, CO and NO₂, which have been monitored for many years at roadside sites.
- Pollutants mainly from smoke from home heating include PM₁₀, PM_{2.5} and CO.
- SO₂ comes from some industrial processes and burning fuels like coal in industrial boilers. Coal used to be used for home fires. With SO₂ concentrations now very low, monitoring has stopped.
- In 2008 the annual average benzene concentration at the Riccarton Road site was just over the guideline and has decreased since then. In 2022, the annual average was one quarter of the guideline.
- CO and NO₂ concentrations don't breach the NESAQ. Annual average NO₂ concentrations at the sites in Riccarton Road and St Albans have been higher than the 2021 WHO guideline (Figure 6).
- Annual average PM₁₀ and PM_{2.5} concentrations measured at the St Albans site are shown in Figure 7. In 2021, the St Albans site was moved and only PM_{2.5} was monitored. Monitoring at the St Albans EP site started in 2022.
- Annual average PM₁₀ concentrations since 2011 are below the AAQ guideline of 20 µg/m³.
- Annual average PM_{2.5} concentrations since 2016 are below the CARP guideline of 10 µg/m³.

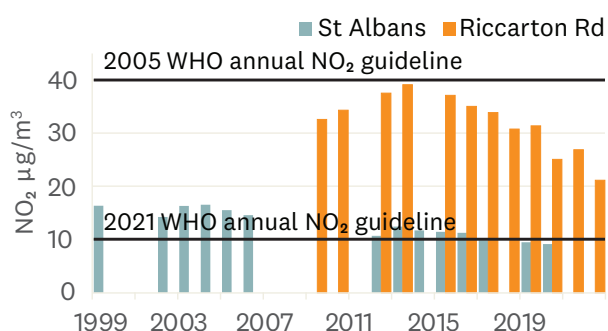


Figure 6: Annual average NO₂ concentrations measured at monitoring sites in Christchurch.

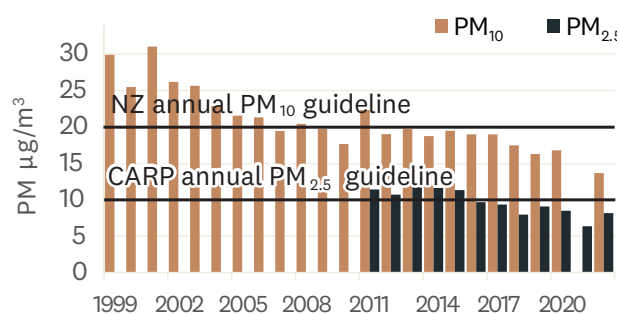


Figure 7: Annual average PM₁₀ and PM_{2.5} concentrations measured at the St Albans EP monitoring site in 2022 and the St Albans site before 2021. PM_{2.5} monitoring started in 2011.

*www.lawa.org.nz/explore-data/canterbury-region/air-quality/christchurch/

- Daily average PM₁₀, PM_{2.5} and NO₂ concentrations measured during 2022 are shown in Figures 8, 9 and 10.
- There were three days in 2022 when PM₁₀ concentrations exceeded 50 µg/m³, breaching the NESAQ.
- There were 17 days in 2022 when PM_{2.5} concentrations exceeded 25 µg/m³. The number of days needs to reduce to zero by 2030 to meet our CARP.
- Figure 10 shows the difference between daily average NO₂ concentrations measured at the roadside site and in a residential area. The concentrations do not exceed the AAQ

guideline. The updated WHO guideline is much less and there are many days when NO₂ concentrations exceeded 25 µg/m³. There have been no breaches of the NESAQ for NO₂, which is for an hour average.

- BaP was measured in 2003 and 2008 and the annual average concentration was ten times the guideline.
- The main source of PM₁₀, PM_{2.5} and BaP in winter (when concentrations are highest) is home heating.
- Strategies are in place to reduce emissions of PM₁₀ from home heating and these will also lower emissions of PM_{2.5} and BaP.

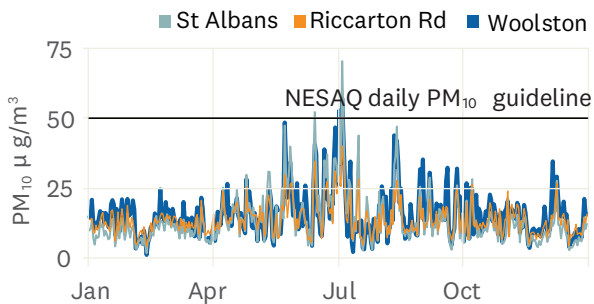


Figure 8: Daily average PM₁₀ concentrations measured at monitoring sites in Christchurch in 2022.

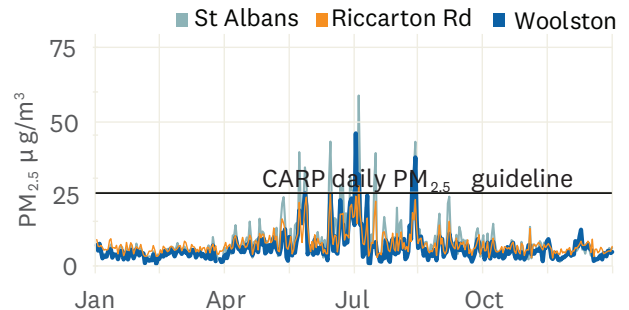


Figure 9: Daily average PM_{2.5} concentrations measured at monitoring sites in Christchurch in 2022.

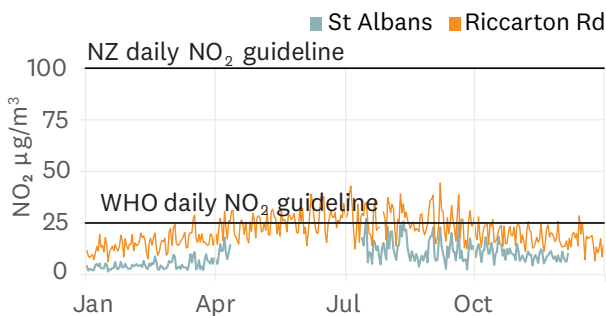


Figure 10: Daily average NO₂ concentrations measured at monitoring sites in Christchurch in 2022.

See lawa.org.nz/explore-data/air-quality to check air pollution in Christchurch during the last few hours and days. You can also find more information on Environment Canterbury's air quality page ecan.govt.nz/data/air-quality-data

The Christchurch airshed

