Fact sheet

Air quality monitoring in Busselton

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 Busselton.

Introduction

Air quality monitoring is undertaken by the department at selected regional and metropolitan locations in Western Australia (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, including Busselton.

Busselton's air quality monitoring site was founded in 2006, primarily to monitor smoke from bushfires, hazard reduction and wood-fired home heaters.

Key points - air quality in Busselton

- Air quality in Busselton 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?

Particulate matter has been monitored in Busselton as PM_{10} since 2020 and $PM_{2.5}$ since 2006.

PM_{10} is particulate matter found in air that is less than 10 micrometres in diameter while $PM_{2.5}$ is less than 2.5 micrometres in diameter. These 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.

Air quality particle standards

The AAQ NEPM provides air quality standards for particles as shown in Table 1.

Table 1 Air quality particle standards

Pollutant	Averaging period	Maximum concentration*
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

* µg/m^3 = micrograms per cubic metre

All exceedances and events within the department network are identified and reported. If an authorised hazard reduction burn, bushfire or continental-scale dust event causes the one-day average particle concentration to exceed the standards, it is referred to as an exceptional event.

Particle levels in Busselton

Busselton occasionally exceeded the daily (24-hour) standard of 50 µg/m^3 for PM_{10} in 2021 as shown in Figure 1.

The site had three exceedances of the daily AAQ NEPM PM_{10} standard in 2021 because of smoke from prescribed burns and one due to windborne dust. Two $PM_{2.5}$ exceedances were due to wood heater smoke and two were due to smoke from prescribed burns.

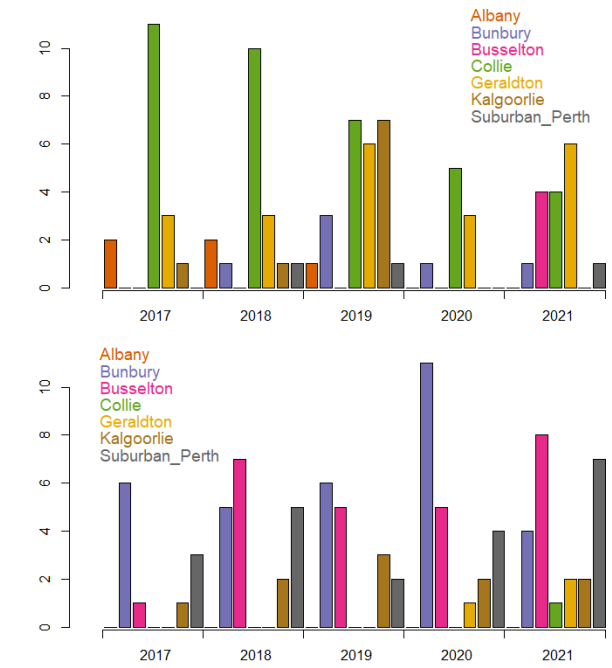

Figure 1 Number of times the NEPM 24-hour standard for PM_{10} (upper) and $PM_{2.5}$ (lower) was exceeded at a range of sites

Since PM_{10} particle monitoring started in 2020, Busselton has not exceeded the AAQ NEPM annual standard for PM_{10} size particles of 25 µg/m^3 (Figure 2).

In 2021, the annual average PM_{10} and $PM_{2.5}$ concentrations in Busselton were 15.2 µg/m^3 and 8.4 µg/m^3 respectively.

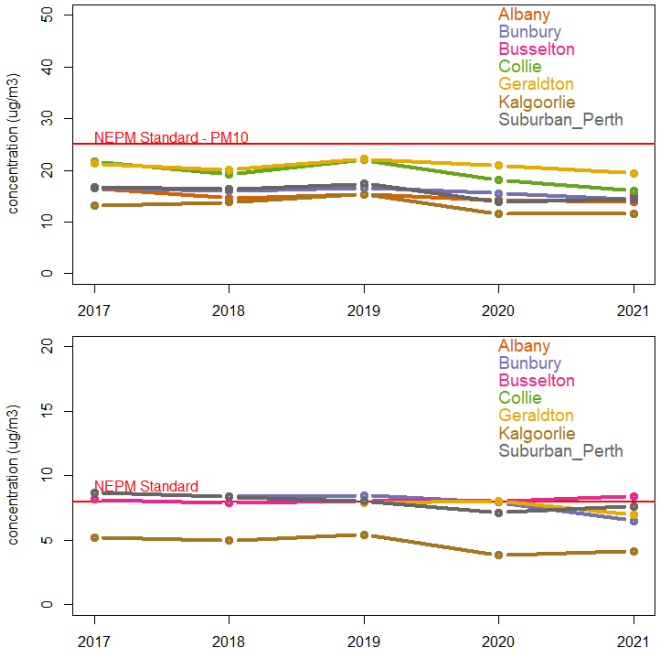

Figure 2 Annual average PM_{10} (upper) and $PM_{2.5}$ (lower) concentrations at a range of sites

As Figure 3 shows, over the past five years moderately elevated particulate levels at Busselton have occurred, generally during the winter months.

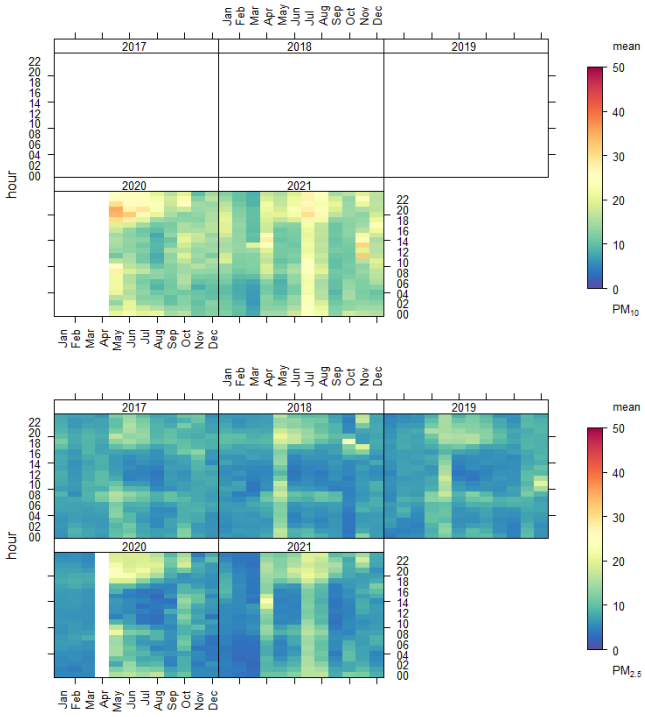

Figure 3. Average PM_{10} (upper) and $PM_{2.5}$ (lower) concentrations at Busselton for each hour over the last five years

The main sources of particles in towns such as Busselton are from bushfires, fire hazard reduction burning and wood heaters.

Monitoring data collected at the department sites are available on the department's website.

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.

PM_{10} 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 PM_{10} 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 WA air monitoring reports contain detailed air quality data for Busselton.

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.