



AIR QUALITY

Annual Monitoring Summary 2011

What drives air pollution in Nelson?

Nelson is surrounded by hills and has a settled climate. Under clear skies during winter the air near the ground can be colder than the air above and smoke from domestic chimneys, factories and vehicle exhausts gets trapped. Winter is also the time when smoke emissions from home heating sources are at their maximum. The combined effect is that in Nelson during winter smoke concentrations can be much higher than normal for a city of this size. On average during the winter period domestic heating contributes 78% of the smoke (there are local variations in sources).

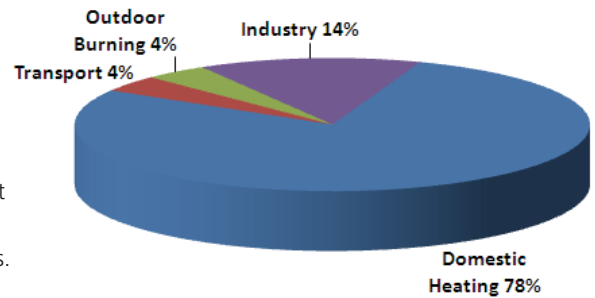


By contrast industry contributes around 14% and vehicles about 4%.

Small smoke particles (PM10) enter the body through the lungs and affect human health. In extreme cases people with heart or lung problems can die.

Different types of fires produce different amounts of smoke. Generally the hotter the fire burns the less smoke it produces. Open fires and outdoor burning tend to produce the most smoke (per piece of wood) and modern enclosed wood burners and pellet fires the least.

Air quality in Nelson can also be affected by chemical pollution not related to burning. Standards are in place for these pollutants and their levels are monitored.



Key Results

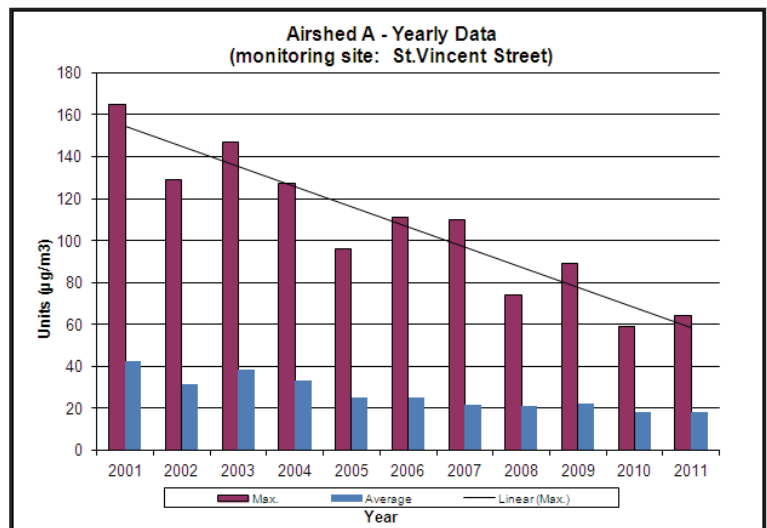
Nelson City Council started monitoring small smoke particles (PM10) in 2001 in the Victory Square area (Airshed A). During that year the maximum concentrations reached 165 micrograms (μg) per cubic metre and the guideline value of $50 \mu\text{g}/\text{m}^3$ (now a National Environmental Standard) was exceeded on 81 days.

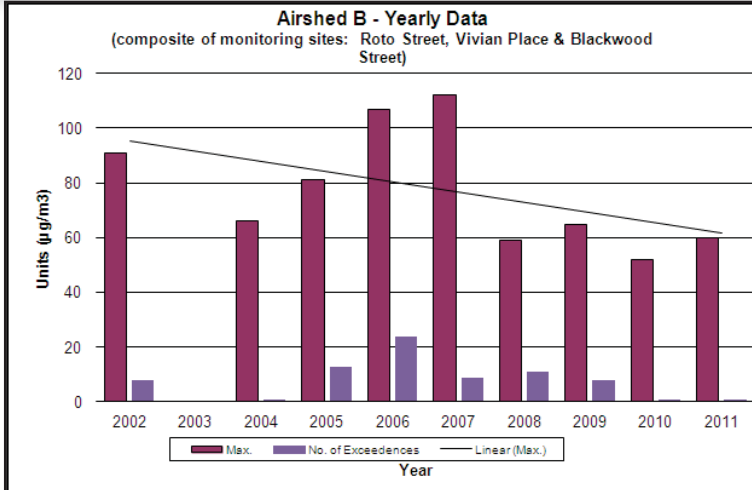
By 2011 the maximum concentration reached was $64 \mu\text{g}/\text{m}^3$ and the standard was only exceeded on 15 days.

Cold weather leads to more home heating and more smoke. Even when yearly weather variations are taken into account there is a similar reduction in the level of small smoke particles over the 10 year period.

Average smoke concentration during 2010 and 2011 were the same ($18 \text{ mg}/\text{m}^3$) however there were twice as many breaches of the NES during 2011 (15) as there were during 2010 (7) breaches.

There is no clear explanation why more breaches of the NES occurred during 2011 than did during 2010. Air temperature, wind direction and wind speed were similar for both years, yet during 2011 peak concentrations were approximately $5 \text{ mg}/\text{m}^3$ higher.





In 2002 Nelson City Council began monitoring small smoke particles in the Tahunanui (Airshed B) and set up a permanent monitoring site in 2005.

While Tahunanui monitoring sites and methods changed between 2002 and 2006 Tahunanui also shows a marked reduction in both smoke concentrations and number of days the Standards are breached.

Many parts of Nelson including Atawhai, the Wood, and the Brook already meet the national standards for air quality.

Pollution levels in these areas appear to be declining as older wood burners reach the end of their lives and are replaced by newer cleaner forms of heating.

What are we doing about it?

NELSON AIR QUALITY PLAN

Nelson City Council has an operative Air Quality Plan which places controls on activities affecting air pollution.

Plan rules prohibit outdoor burning in urban areas, the use of open fires and the installation of enclosed burners in houses that do not already have an enclosed burner.

Under the Clean Heat Warm Homes scheme 540 open fires and approximately 1500 older burners have been replaced with cleaner heating appliances in our most polluted airsheds. The Clean Heat Warm Homes scheme will be finishing in June 2012.

The final burner phase out date of 1 Jan 2012 has now passed and Council will be focussing now on education and enforcement to reduce emissions from existing enclosed burners, with emphasis on the use of non-compliant burners.

There is one remaining phase out date of 1 Jan 2013 for Jetmaster-type fires in the urban area.



INDUSTRIAL EMISSIONS

The Council is working with industry to reduce its contribution to air pollution through the resource consents process. Polluting industries were required to apply for resource consent for their discharge before 28 August 2008 and work on this in on-going. Progress is being made with some industries opting to replace old coal-burning boilers for cleaner wood pellet-burning boilers.

GOOD WOOD

Even clean air burners contribute more to air pollution when poor fuel is used. Burning wet wood produces more smoke, burning treated timber can release arsenic, and burning plastic produces dioxins.

Nelson City Council established the Good Wood scheme to encourage people to buy and burn dry, untreated timber. There are currently nine wood merchants registered with the Good Wood scheme. See www.nelsoncitycouncil.co.nz for a list of suppliers.

For further information about Council environmental monitoring please visit www.nelsoncitycouncil.co.nz/environment.



Nelson City Council
te kaunihera o whakatū

PO Box 645 Nelson 7040 • 03 546 0200

www.nelsoncitycouncil.co.nz