Air Quality

Monitoring Summary 2010

Key points

- PM_{10} monitoring sites located in Blenheim and Picton
- Compliance with the NES for PM_{10} in Blenheim for the first time.
- Management options being considered to reduce PM_{10} concentrations in Blenheim:
  1. Ban on open fires
  2. Ban on urban outdoor burning
  3. Replacement of wood burners after 15 years
  4. Apply the NES for woodburners to all solid fuel burners.
- Trends analysis to determine how PM_{10} concentrations have changed in five years.

Why we monitor air quality

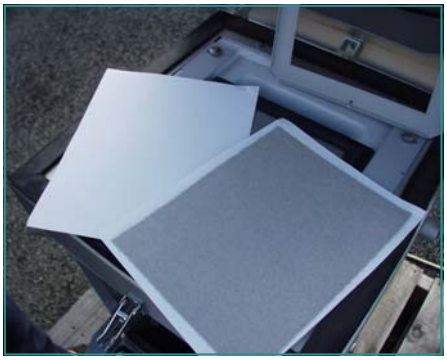
- National Environmental Standards (NES) for air quality were introduced in 2005. Compliance with these standards must be achieved by 2013.
- There are five air contaminants listed in the regulations, of these only PM_{10} (fine particulate matter) exceeds the standards in Marlborough.
- Exposure to excessive amounts of PM_{10} can lead to serious health problems, such as respiratory problems and heart disease. These problems are exacerbated in the young and elderly and in those with pre-existing medical conditions.

Locations of the PM_{10} monitoring sites in Marlborough

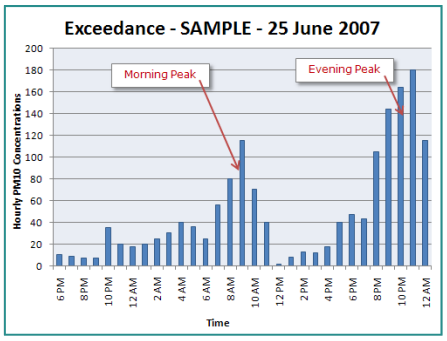
Where and how we monitor air quality

Past studies and investigations have shown that Blenheim and in particular Redwoodtown have the poorest air quality in terms of PM_{10}. PM_{10} is also a problem in certain areas of Picton. On average there are 3 to 5 exceedances of the NES for PM_{10} in Blenheim, most of these are measured at the Blenheim Bowling Club in winter. Wintertime (May to August) is when meteorological conditions (cold, still air conditions) are most conducive to elevated PM_{10} concentrations and is also the time of year when solid fuel (wood and coal) is burned for home heating. PM_{10} is measured over 24 hours from midnight to midnight. Fine particulate matter from the air is deposited on a filter, the darker the filter after sampling the poorer the air quality.

The air quality monitor at the Blenheim Bowling Club records hourly PM_{10} concentrations, from which a 24 hour average is calculated. Monitoring shows that, during the wintertime when air pollution is at its worst, there are two 'peaks' in PM_{10} concentrations, an evening peak and a lesser morning peak, typically coinciding with the burning of solid fuel for domestic heating.



Filter paper showing PM_{10} (fine particulate matter) after 24 hours of exposure to air during winter. This is what can happen to your lungs.



Hourly PM_{10} concentrations

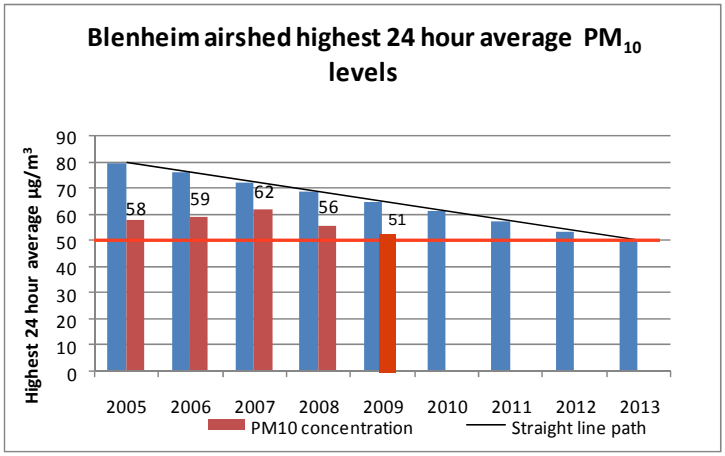
What happened in 2009?

Compliance with the NES

In 2009 Blenheim was compliant with the NES for the first time since monitoring began with only 1 exceedance of the standard, recorded on the 30th May 2009.

There has been a gradual reduction in the amount of PM_{10} emissions entering the atmosphere as a result of a combination of the following factors:

- Superior and increased use of insulation in houses
- An emission standard for all new woodburners
- A desire in some cases to switch to more convenient forms of heating such as heat pumps.
- Improved performance in local industrial emissions
- An awareness amongst the public and wood suppliers of the benefits of burning dry seasoned wood and ensuring that fires are not 'dampened' down at night time.

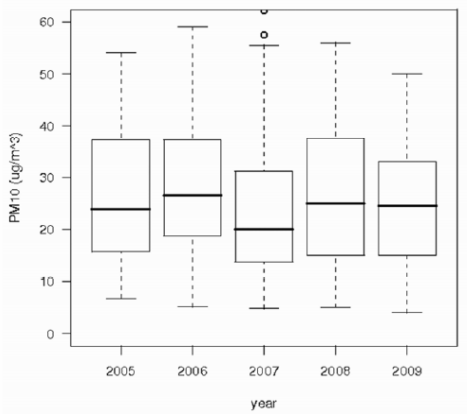


A comparison of PM_{10} concentrations in Blenheim since the introduction of the National Environmental Standard for PM_{10} (shown as the red line) in 2005. Maximum PM_{10} concentrations are shown as red bars.

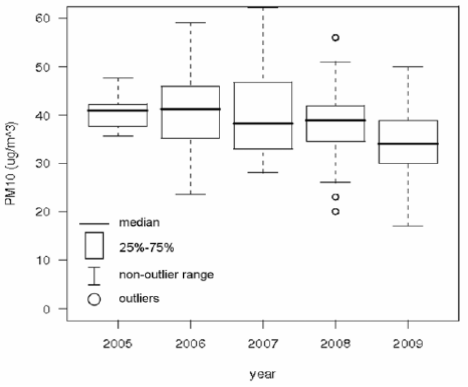
Management options being considered to reduce PM_{10} concentrations in Blenheim

1. A ban on open fires. Open fires are the least efficient method of home heating producing the most emissions (PM_{10}) and the least amount of heat per unit burned.
2. A ban on urban outdoor burning. The burning of rubbish and garden waste produces a significant amount of PM_{10} and can have a significant nuisance level in the urban environment.
3. Replacement of wood burners after 15 years. 15 years is considered to be the effective life span of a woodburner to ensure it is operating to its maximum efficiency.
4. Applying the NES for woodburners to multi-fuel burners. This effectively bans the use of coal.

Trends analysis to see how PM_{10} concentrations have changed since the introduction of the NES in 2005.



Winter (May to August) PM_{10} concentrations recorded in Blenheim. There is no change in the median concentration during this time.



Winter PM_{10} concentrations recorded in Blenheim when meteorological conditions were most conducive to elevated PM_{10} concentrations. A slight downward trend is apparent.

What can you do to help clean up our air?

- Only burn dry seasoned wood, if you are unsure about whether the wood is dry enough get your supplier to check the moisture content, it should have less than 25% moisture content, they will be happy to do so.
- Don't burn rubbish, plastics, treated or painted wood, glossy paper as these release harmful toxic emissions to the atmosphere.
- Ensure your chimney stack is cleaned regularly, at least once a year.

Interesting facts

- Did you know that reducing PM_{10} concentrations is not only beneficial to your health but also benefits the Earth? A US study showed that there is a direct correlation between a reduction in PM_{10} emissions and a reduction in global warming (*Sunday, 4 January 2009 , Independent News (UK)*).
- Improving outdoor air quality will also have benefits for indoor air quality.

Published

March 2010

For more information on air quality go to

www.marlborough.govt.nz

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