AIR

Burning inappropriate substances deteriorates the quality of the air

AIR

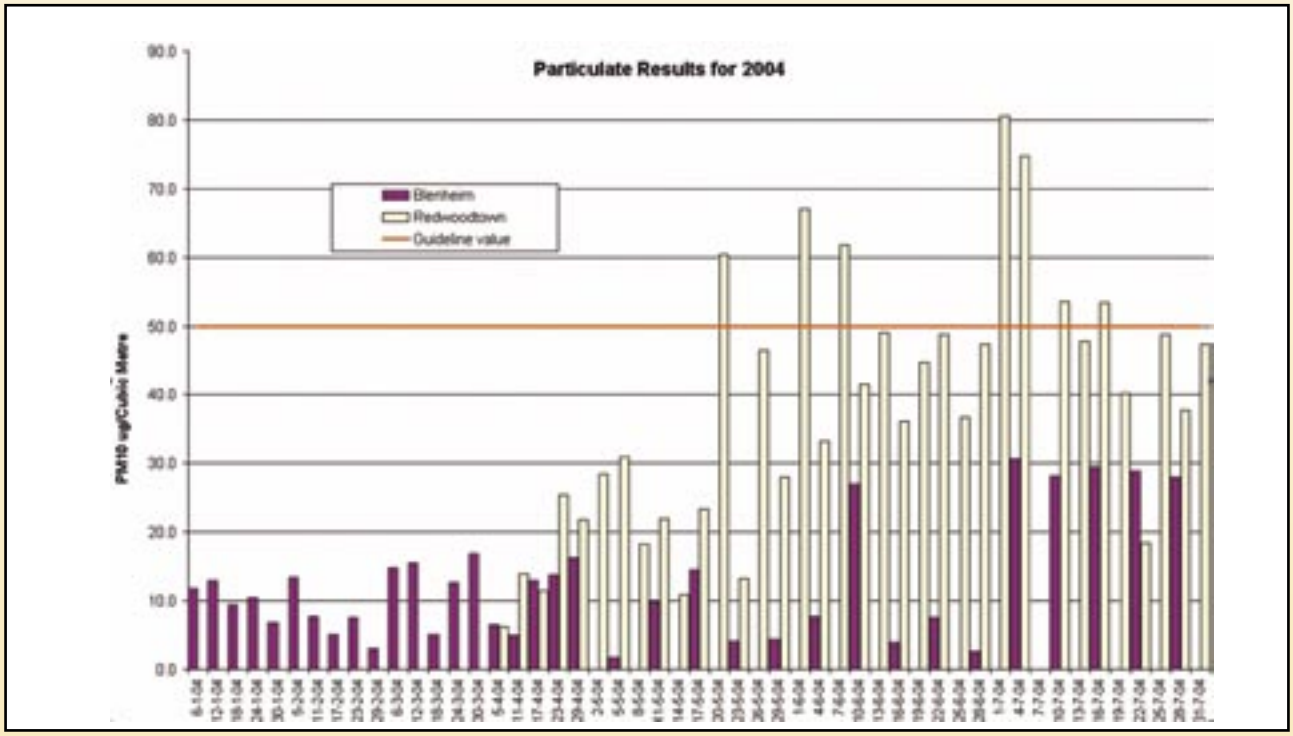
Clean air is probably our most underrated resource, as generally, people only become aware of air quality issues when air quality is degraded. While air quality in Marlborough is generally perceived to be very good, monitoring provides useful data on the district's overall air quality. This then provides valuable information that will be beneficial to the long-term management of air resources. A new strategy for monitoring air quality over the next five years is to be prepared in early 2005. This is partly in response to the government's National Environmental Standards for air quality that will be introduced by regulation on 1 October 2004, but also in response to what we have learned through monitoring Marlborough's air resources over the past four years.

Maintaining and enhancing the air quality in Marlborough is essential for all living ecosystems, human health, amenity values and our valuable local tourism industry.

PARTICULATE MONITORING (PM_{10})

Particulate matter refers to many substances that exist in the atmosphere. It includes a wide range of chemically and physically diverse substances, including all solid and aerosol matter that exists in background conditions. Particulate matter has been divided into several categories based upon the potential health or environmental effect. Very small particles can be inhaled into the respiratory system and may have major or minor health effects. Major health effects are increased mortality, aggravation of existing respiratory disease, increased hospital admissions, increased lost work days and school days and an increase in restricted activity days.

Figure 1: Particulate (PM_{10}) monitoring at Middle Renwick Road and Redwoodtown



Changing filter on PM_{10} machine

Particulate monitoring in Marlborough has been assessed in the past against the Ministry for the Environment's Ambient Air Quality Guidelines. The guidelines set out values for a number of contaminants, including PM_{10}. Environmental Performance Indicators are also included as part of the guidelines and the Council can determine whether or not action needs to be taken to improve air quality in the district, based on the information received from monitoring. (Some of the guidelines, including that for particulate monitoring, will become National Environmental Standards in October 2004 - see later in this chapter for a discussion on this.)

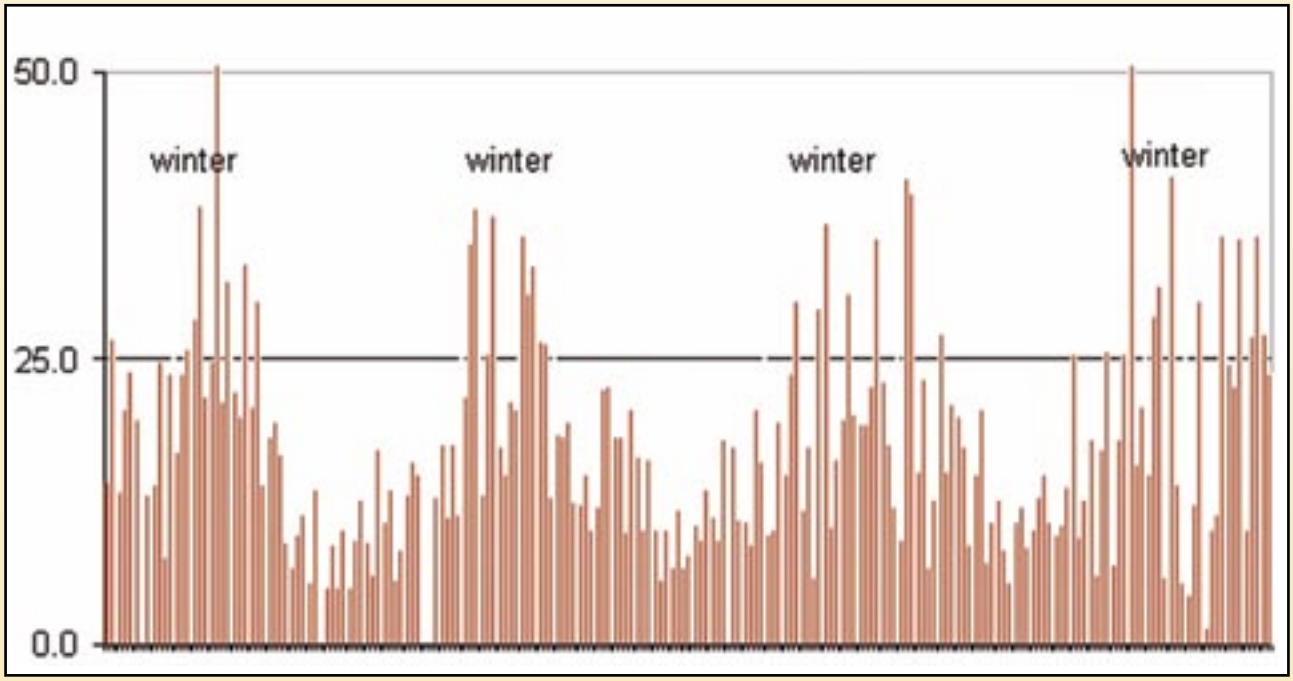
Figure 1 shows the results for monitoring particulate (PM_{10}) at the Middle Renwick Road and Redwoodtown sites for January to July 2004.

As can be seen there is an increase in the amount of particulate during the winter months, with the Redwoodtown site generally having higher results. During the months May to July 2004 the PM_{10} concentrations at the Redwoodtown site exceeded the National Environmental Standard on seven monitoring occasions. (The new National Environmental Standard envisages that 'clean air' will be achieved if 50 $\mu g/m^3$ is not exceeded more than five days in a year, or that no one day exceeds a limit of 120 $\mu g/m^3$.)

Previous monitoring results show that during the summer, particulate is low at all sites (Middle Renwick Road, Redwoodtown, Renwick and Picton). The increased level of particulate in winter relates to housing density, smoke from fireplaces, and weather.

We now know that winter PM_{10} levels for Middle Renwick Road are generally much lower than at the sites in Redwoodtown. It is also likely that other areas of Blenheim will have winter PM_{10} levels similar to those at Redwoodtown - see Figure 2.

Figure 2: Seasonal variation for PM_{10} at Blenheim - Middle Renwick Road site in Blenheim



VISIBILITY MONITORING

Visibility is monitored as an indicator of general air quality. Visibility includes both a measure of the visual range and a judgement of the clarity of air. Visual range can be measured as the distance at which it is possible to perceive an object on the horizon. Degraded visibility is when the clarity, colour, texture, and form of what is seen through the atmosphere are obscured. It is influenced by a number of emissions and air pollutants, and affected by a number of natural factors such as temperature, humidity, meteorology, time and sunlight.

In Marlborough the Woodbourne Air Traffic Control Tower is currently the main site for visibility monitoring. From the tower there are unobstructed views across the Wairau Plain to the White Bluffs and to the North Island.

Visibility monitoring from Woodbourne Air Traffic Control Tower

NATIONAL ENVIRONMENTAL AIR QUALITY STANDARDS

The government approved the national environmental air quality standards in July 2004 and they will become effective through regulation on 1 October 2004.

WHAT IS A NATIONAL ENVIRONMENTAL STANDARD?

National Environmental Standards are issued under the Resource Management Act by central government that prescribe technical standards, methods or requirements for environmental matters. They apply nationally, meaning that each local council must enforce the same standard (although they can impose stricter standards when local conditions permit). National Environmental Standards may cover things such as:

- water quality, level or flow;
- air quality;
- soil contaminant levels;
- noise; and
- monitoring requirements.

WHAT ARE THE BENEFITS OF NATIONAL ENVIRONMENTAL STANDARDS?

There are four major benefits of National Environmental Standards:

- They protect public health and the environment by providing an environmental "bottom-line" below which councils cannot go.
- They provide greater certainty for industry by setting a "level-playing field" across councils that clarifies environmental expectations to guide resource consent applications and decision making.
- They can express the national interest by providing clear direction to all local councils about the required national standards.
- They demonstrate how New Zealand is meeting its international obligations

(e.g., the Stockholm Convention, which is a United Nations environmental treaty on toxic chemicals. The objective of the treaty is to protect human health and the environment from persistent organic pollutants.)

IS NEW ZEALAND'S AIR QUALITY SO POOR THAT WE NEED THESE STANDARDS?

On the whole, New Zealand has relatively good air quality due to low population density, close proximity to the sea, and remoteness from other continents and sources of pollution. But, based on monitoring data to date, it is known there are 28 urban centres that are currently above the acceptable levels of air pollution, in particular fine particles (i.e. the 28 locations exceed this standard). There are likely to be many more. This is largely due to home heating emissions, except in Auckland where vehicles are a major source of air pollution.

Monitoring in Blenheim has shown that during the winter there are unacceptable levels of pollution at the Redwoodtown site.

WHY HAS THE GOVERNMENT INTRODUCED 14 NATIONAL ENVIRONMENTAL STANDARDS FOR AIR QUALITY?

For two reasons:

- First, clean air is essential for the health of both the public and the environment.
- Secondly, National Environmental Standards are a key tool in making the Resource Management Act work. Local government and industry called on the Ministry for the Environment to promote national consistency and certainty in resource management. The Environment Minister has responded and the government considers National Environmental Standards the best tool to achieve this.

The Standards will become law by regulation, supporting the visibility and effectiveness of environmental legislation in New Zealand.

FROM WHEN DO THESE STANDARDS APPLY?

From 1 October 2005, regional councils must monitor air quality and publicly report whether the air in their regions is within or exceeds the standards. Regional councils with air pollution levels that exceed the standards are expected to make a plan for improvement, and show how the standards will be achieved by 2013.

Black smoke from rural rubbish burn-off

When deciding on whether to grant resource consents, councils must consider the net result of all activities in their regions and how they affect air quality. After 2013, councils will not be able to grant new discharge consents for emission of fine particles to air in areas that exceed the standard.

There are seven standards for dioxins and other toxics, five for outdoor air quality, one for the design of new wood burners in urban areas, and one requiring landfill operators to collect and destroy their greenhouse gas emissions. The first of the standards comes into effect on 1 October 2004, banning specific activities that discharge dioxins and other toxics to air. From September 2005, the design standard for new wood burners in urban areas applies. From October 2006, school and hospital incinerators will be banned unless they obtain a resource consent. The timing of the standards allows transition for individuals and businesses affected.

The ambient air quality standards set a maximum level for the amount of fine particles, carbon monoxide, nitrogen dioxide, sulphur dioxide and ozone in the air.

EXAMPLES OF THE NATIONAL ENVIRONMENT STANDARDS

Particulate

The standard for fine particles (less than 10 microns in diameter - PM10) is 50 µg/m^3 averaged over one day. The standard envisages that 'clean air' will be achieved if 50 µg/m^3 is not exceeded more than five days in a year, or that no one day exceedance is above a limit of 120 µg/m^3.

Design standard for wood burners

Any new wood-burning appliance installed into a house in an 'urban area' must be identical (in terms of the features that are likely to affect its emissions) to a unit that has been tested in accordance with AS/NZS 4013:1999 ('Domestic solid-fuel-burning appliances - Method for determination of flue gas emission') or an equivalent.

The wood-burning appliance must also meet an emission limit of 1.5 grams of particulate matter per kilogram of fuel burned, averaged over high, low and medium burn rates.

More information on the standards can be found on the Ministry for the Environment website or by contacting the Council.

Smoke from domestic home heating in Picton