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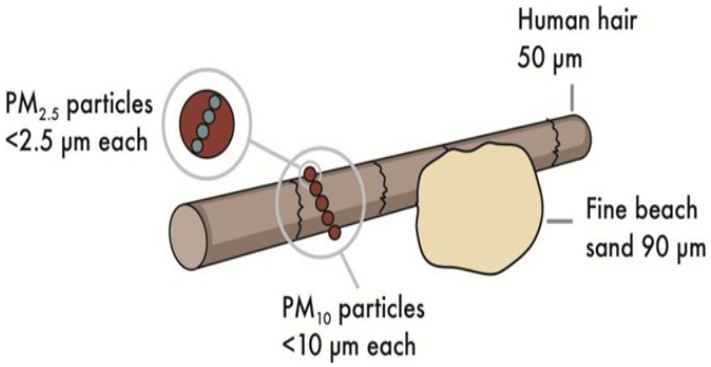
MASSEY UNIVERSITY TE KUNENGA KI PŪREHUROA UNIVERSITY OF NEW ZEALAND

Annual Average PM_{10} Concentration

This factsheets provides statistics on the annual average PM_{10} (particulate matter less than 10 micrometre) levels in New Zealand. Particulate matter in the air can contribute to negative health effects. Most PM_{10} health impacts are associated with long-term exposure to PM_{10}. WHO recommends a 20µg/m^3 guideline of annual average PM_{10} to prevent long-term health risk.

HIGHLIGHTS IN 2012:

- **New Zealand's annual average PM_{10} was 15.6µg/m^3 a decrease of 8% since 2006.**
- **87% of monitored sites met the WHO long-term guideline.**
- **Seven monitoring sites exceeded the guideline: Christchurch, Timaru, Rotorua, Invercargill, Gore, Alexandra and Ashburton.**



Source: Ministry for the Environment, 2014

Long-term levels of high PM_{10} can adversely affect health

Good air quality is fundamental to our health and wellbeing. We each breathe about 14,000 litres of air each day. Contaminants in outdoor air can adversely affect our health.

Particulate matter (PM) consists of small airborne particles, including solid matter and liquid droplets. PM in the air can contribute to heart (cardiovascular) and lung (respiratory) diseases, leading to hospital admission, cancer and premature death (WHO, 2013; Loomis et al., 2013).

PM_{10} (particles with a diameter less than 10 micrometres) is the major air pollutant monitored in New Zealand. The annual average PM_{10} concentration gives the best indicator of general air quality conditions and long-term exposure. Most PM_{10} health impacts are associated with long-term exposure to PM_{10} (Ministry for the Environment, 2014).

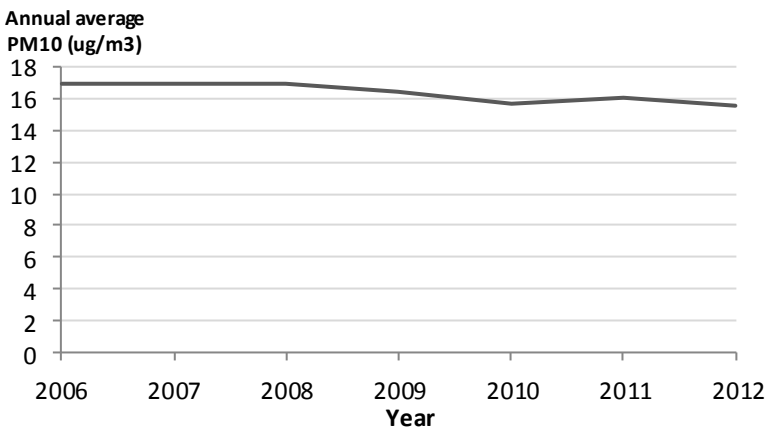
The World Health Organization (WHO) recommends a 20µg/m^3 guideline of annual average PM_{10} to provide a minimum level of protection against long-term health risk (WHO, 2006)

In 2012, New Zealand's annual average PM_{10} was 15.6µg/m^3 , a decrease of 8% from 2006.

In 2012, New Zealand's annual average PM_{10} concentration was 15.6 µg/m^3 (at 55 monitoring sites), an 8% decrease from 17.0 µg/m^3 (at 38 monitoring sites) in 2006(Figure 1).

The increase of annual average PM_{10} level in 2011 was influenced by higher concentrations in Christchurch. Due to the Canterbury earthquakes, the dust dispersion increased from silt, damaged roads and grit (Environment Canterbury, 2011).

Figure 1: Annual average PM_{10} in New Zealand, 2006-2012



Source: Ministry for the Environment, 2014

In 2012, most New Zealand monitored sites met the WHO long term guideline

In 2012, 87% (48 out of 55) of the monitored sites in New Zealand met the World Health Organization (WHO) long term guideline (20 µg/m^3).

There were seven monitoring sites that exceeded the PM_{10} guideline in 2012:

- cities greater than 100,000 people: Christchurch (Woolston)
- towns of 25,000–60,000 people: Timaru, Rotorua (Ngapuna), Invercargill (Pomona Street)
- towns less than 25,000 people: Gore, Alexandra, Ashburton.

In 2012, Timaru had the highest annual PM_{10} level (27.2µg/m^3).

Figures 2-4 show the annual average PM_{10} concentrations in cities, medium-sized towns and small towns.

Figure 2: Annual average PM_{10} concentration in cities (greater than 100,000 people), 2012

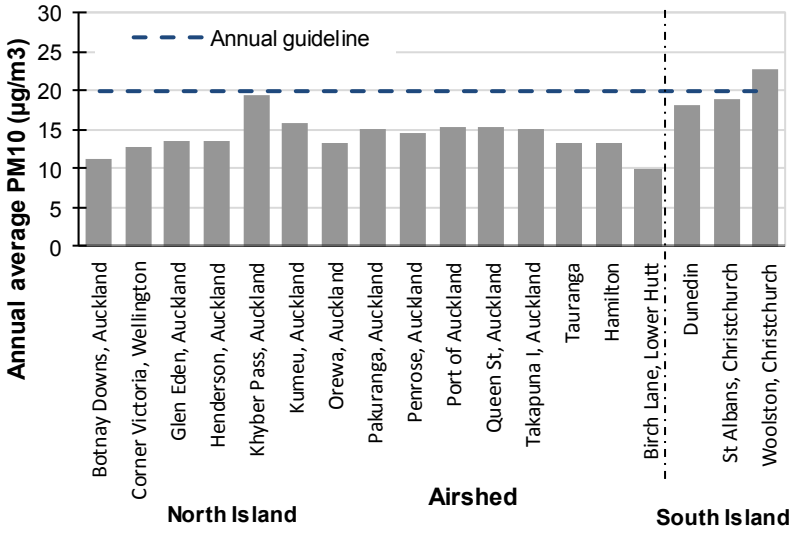


Figure 3: Annual average PM_{10} concentration in medium-sized towns (between 25,000 and 60,000 people), 2012

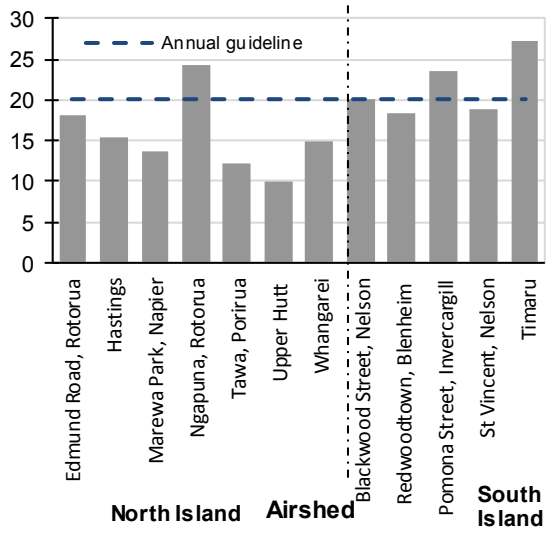
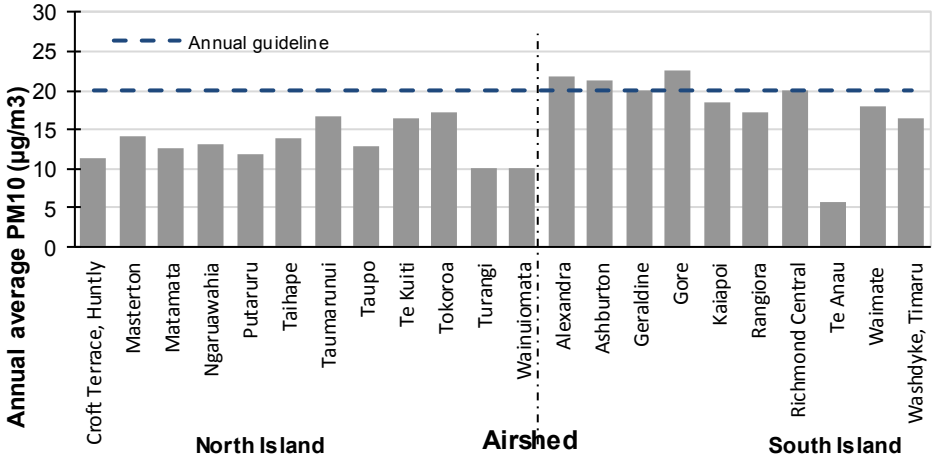


Figure 4: Annual average PM_{10} concentration in small towns (less than 25,000 people), 2012



Source for figures 2-4: the Ministry for the Environment, 2014

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References:

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