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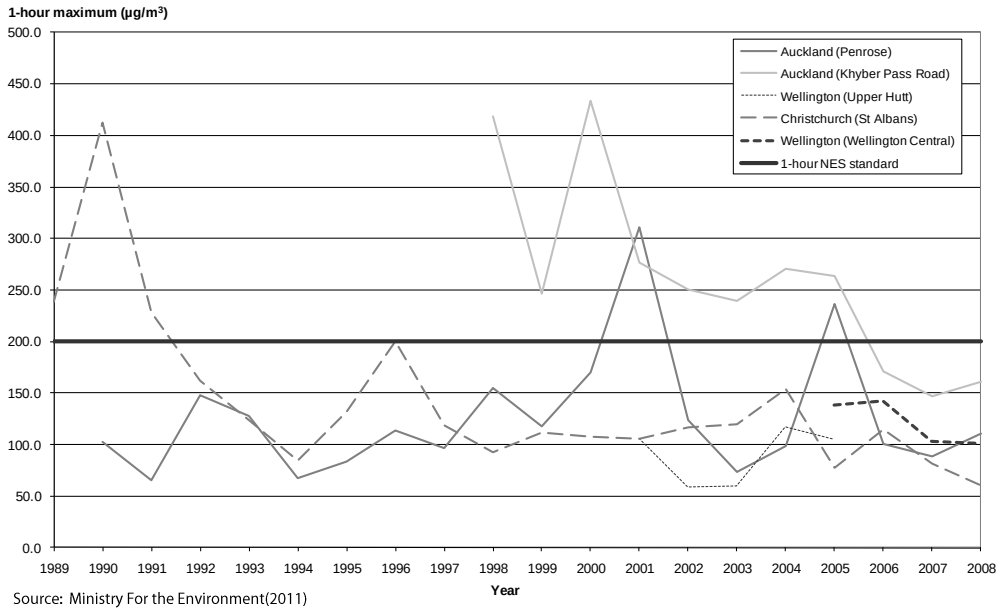
EXCEEDANCES OF NITROGEN DIOXIDE (NO_2) ENVIRONMENTAL STANDARDS IN NEW ZEALAND

Air quality is a critical environmental health issue, as clean air is essential to life and development. Air pollution has been linked to a wide range of health effects, including by exacerbating respiratory and cardiovascular conditions (American Thoracic Society 1996, 2000) and causing restricted activity days (eg, air pollution causing breathing problems which prevent work attendance) (Fisher et al 2007).

The sources of air pollution can be domestic, vehicular, industrial and natural (including wind-blown dust). However, the key pressure on air quality in New Zealand is domestic heating, with high levels of particulate matter due to household wood and coal burning (Ministry for the Environment 2010a). In Auckland, population growth is increasing the number of vehicles on the road, which also contributes to poor air quality (Ministry for the Environment 2010c). In general, the concentration of pollutants in the air can be influenced by pollution sources, location, topography, time of day, weather conditions, wind patterns, season and specific emission types and levels.
Studies have suggested that NO_2 is a toxic gas with health effects at a concentration of 200µg/m^3 or greater (WHO 2006a).The WHO guideline (and New Zealand national environmental standard for NO_2) has been set at a one-hour maximum concentration of 200 µg/m^3.

Figure 1 presents the one-hour maximum levels of nitrogen dioxide at sites in Auckland, Wellington and Christchurch, and compares each one with the national environmental standard of 200 µg/m^3 (measured as a one-hour average). The standard may be exceeded nine times per year.

Figure 1:
NO_2 ONE-HOUR MAXIMUM LEVELS IN FIVE MONITORED AIRSHEDS, 1989-2008



Source: Ministry For the Environment(2011)

NO_2 ONE-HOUR MAXIMUM LEVELS

The maximum levels have fluctuated over time, but have decreased in Christchurch (St Albans) since 1991 and in Auckland (Khyber Pass Road) since 2000. However, in 2001 and 2005 the maximum one-hour NO_2 concentration at one Auckland site (Penrose) increased sharply, exceeding the level set in the National Environmental Standards for Air Quality. Maximum one-hour NO_2 concentrations at the Auckland site of Khyber Pass Road consistently exceeded the national environmental standard up until 2005, after which levels dropped below the standard.

References
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