

## Housing and Air Quality

### Introduction

The following is a position statement on housing and air quality prepared by Population Health for the Waikato District Health Board (Waikato DHB).

### The Waikato District Health Board's position

The Waikato DHB supports the mechanisms of partnership between local government and key stakeholders to support healthy housing and improved air quality within the Waikato region. Healthy housing means warm, dry and energy efficient households that use clean heat options.

The Waikato DHB agrees that programmes and future funding for healthy housing and improved air quality should be targeted to areas with high levels of socio-economic deprivation, lower quality housing stock (e.g. older homes), and poor air quality.

The Waikato DHB is committed to reducing health inequalities<sup>i</sup>. A targeted needs based approach to healthy housing intervention is supported and adopted to help reduce health inequalities. This means focusing on working within high deprivation areas and with vulnerable population groups. These include but are not limited to Māori, children, older persons and those who have pre-existing medical conditions.

### Housing and health: background

Housing is an important determinant of the population's health and well being.

Indoor thermal conditions are important for health and comfort, although individuals vary in their temperature requirements. Houses that are cold, damp and crowded can increase the incidence of respiratory disease and infectious disease (e.g. tuberculosis, acute rheumatic fever and meningococcal disease). The World Health Organisation recommends a minimum indoor temperature for health of 18°C, with up to 20 - 21°C for more vulnerable groups, such as older people and young children. This recommendation is to minimise health risks associated with low indoor air temperatures.

It is important for New Zealanders to have clean and efficient heating within the houses they live in<sup>ii</sup>. Appropriate insulation and heating options support this outcome.

A study conducted by Howden-Chapman et al published in 2007 on the effect of insulating existing houses and health inequalities results showed that participants living in houses that had received insulation had an improved self rated health, self reported wheezing, days off school and work and visits to general practitioners. There was also a trend showing fewer hospital admissions and visits to emergency departments<sup>iii</sup>.

### Air quality and health: background

Air quality is usually measured by testing for the amount of particulate matter (PM<sub>10</sub>) in the air. PM<sub>10</sub> is air borne particulate matter that is smaller in diameter than 10 microns<sup>iv</sup>. Most

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poor air quality in the Waikato DHB area is caused by particulate matter<sup>v</sup>. There is accumulating evidence for an association between exposure to PM<sub>10</sub> particles (which can penetrate the lower respiratory system) and adverse health effects.

Acute effects of PM<sub>10</sub> pollution include increased mortality (approximately 1% increase in mortality for each increase of PM<sub>10</sub> by 10 µg/m<sup>3</sup>), increased hospital admission rates for respiratory disease, additional visits to doctors, increased prescription of medicines (particularly for asthma) and more days off work and school. This is validated by the study conducted by Howden-Chapman, as referenced above. There is also increasing evidence of long-term adverse effects associated with chronic exposure to particulate pollution such as cardiovascular and respiratory mortality, bronchitis and reduced lung function<sup>vi</sup>.

To date, no safe level of PM<sub>10</sub> exposure has been identified. The population groups that appear to be more sensitive to PM<sub>10</sub> exposure include the elderly, children and infants and those with pre-existing respiratory, chronic disease and/or heart disease. People of Māori and Pacific Island descent and those experiencing high levels of socio-economic deprivation are disproportionately represented in these health statistics. The direct costs of health care alone that result from PM<sub>10</sub> emissions in New Zealand are conservatively estimated at approximately \$270 million per year<sup>vi</sup>.

### Air quality and health: Waikato region

While it is recognised that traffic has an effect on air quality, approximately 85% of total PM<sub>10</sub> emissions in the Waikato DHB is known to be attributed to domestic solid fuel heating sources (older wood burners in particular)<sup>vii</sup>. This is consistent with many New Zealand towns. Effective clean heat options in terms of PM<sub>10</sub> emissions include electric fixed and portable systems (e.g. heat pumps), flued gas systems, low-emissions wood burners and pellet burners.

The Waikato Regional Plan<sup>viii</sup> lists PM<sub>10</sub> limits in the ambient air quality guidelines as 50µg/m<sup>3</sup> in a 24 hour period or 20 µg/m<sup>3</sup> as an annual average.

In the past insulation and heating initiatives have not been targeted with a needs based approach. Recent developments<sup>1</sup> have indicated there is a need to direct resources to areas that have high deprivation levels and where population groups are vulnerable<sup>ix</sup>.

<sup>i</sup> Waikato District Health Board (2005) *District strategic plan*. Retrieved 24 July, 2009 from <http://www.waikatodhb.govt.nz/file/fileid/7089>

<sup>ii</sup> Ministry of Social Development. (2008). *The social report*. Wellington: Ministry of Social Development.

<sup>iii</sup> Howden-Chapman, P., Matheson, A., Crane, J., Viggers, H., Cunningham, M., Blakely, T., Cunningham, C., Woodward, A., Saville-Smith, K., O'Dea, D., Kennedy, M., Baker, M., Waipara, N. Chapman, R. & Davie, G. (2007) Effect of insulating existing houses on health inequality: cluster randomised study in the community. Retrieved June 29<sup>th</sup>, 2009 from <http://www.bmj.com/cgi/rapidpdf/bmj.39070.573032.80v1>

<sup>iv</sup> Barns, S. (2008) Cost effectiveness of policy options for air quality management in Tokoroa. Retrieved July, 31 2009 from the Environment Waikato website: <http://www.ew.govt.nz/pagefiles/9857/tr0823.pdf>

<sup>v</sup> Ministry for the Environment (2009) Air Quality (Particulate Matter – PM<sub>10</sub>). Retrieved July 2<sup>nd</sup>, 2009 from the Ministry of the environment website <http://www.mfe.govt.nz/environmental-reporting/report-cards/air/2009/>

<sup>vi</sup> Environment Waikato & Waikato District Health Board. (2009). Tokoroa warm homes clean air project: Health and wellbeing impact assessment. EW ISSN: 1177-9284. Hamilton: Environment Waikato and Waikato District Health Board

<sup>vii</sup> Environment Waikato (2002). Hamilton: Emission inventory assessment: 1997 and 2001. Technical report prepared by E. Wilton for Environment Waikato, Retrieved June 25<sup>th</sup> 2009 from: <http://www.ew.govt.nz/Publications/Technical-Reports/Hamilton-emission-inventory-assessment-1997-and-2001/>

<sup>viii</sup> Environment Waikato. (October 2002). Operative Waikato regional policy statement. Retrieved June 25<sup>th</sup> 2009 from: <http://www.ew.govt.nz/Policy-and-plans/Regional-Policy-Statement/Operative-Waikato-Regional-Policy-Statement-October-2000/>

<sup>ix</sup> Atatoa-Carr, P. (unpubl.) Healthier housing Waikato: Stocktake and GIS mapping of houses in the Waikato region that have undergone an insulation retrofit. Waikato DHB Population Health internal document.

<sup>1</sup> A review being conducted at the moment for the National Environmental standards for air quality will influence the appropriate review time for this position statement. The Minister for the Environment will be reporting back to cabinet in the advisory groups findings in February 2010

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