NOISE

What is this?

Noise is difficult to define because outside occupational areas, one person's noise may be another person's enjoyment. Noise pollution is considered to be excessive noise under human control that unreasonably interferes with the peace, comfort and convenience of other people.

What is considered excessive noise can change depending on the time of day and other circumstances. For example, a stereo played at a certain volume may be acceptable at 3pm, but not at midnight. Some noises can be excessive at any time of the day. Additionally, some people are more sensitive to noise than others.

Why is it important?

What is considered excessive noise can change depending on the circumstances. The Christchurch City Council provides general guidance about the kind of factors that are taken into account including:

There are a number of human responses to the adverse effects of noise - behavioural responses such as coping strategies and complaints, acute and chronic physiological responses, cognitive responses such as task and learning interference, and clinical effects such as mental and cardiovascular symptoms.[1] Long term exposure to noise has been associated with stress and annoyance, which in turn is linked to an increased risk of heart attacks, poor educational and work performance, absenteeism, aggression and depression. Noise at night disturbs slow wave sleep decreasing sleep quality and affecting day-time activities. Long-term exposure to noise can also result in hearing impairment, changes in blood pressure, in the prevalence and incidence of hypertension, angina pectoris and myocardial infarction as well as increased hospital admissions and use of health services.[2]

Data[3]

Between 1991 and 2009, the total number of noise complaints received by the Christchurch City Council increased from 4,115 to 13,344 per year. In 2009, there were 12,234 residential noise complaints and 1,110 non-residential noise complaints. Residential noise complaints comprised 92% of total noise complaints in 2009, the highest proportion in the above time series. 2009 had the highest number of noise complaints on record, reaching 13,344. This was an increase of 2,782 (26%) from 2008. This increase was largely due to residential complaints, which increased by 28% from 9,557 in 2008 to 12,234 in 2009. Overall, between 1991 and 2001, the total number of noise complaints per year increased.

[1] Boesch, H-K., Kahlmeier, S., Sommer, H., van Kempen, E., Staatsen, B., Racioppi, F. 2008. Economic valuation of transport-related health effects. Review of methods and development of practical approaches, with a special focus on children. Copenhagen: World Health Organisation. http://www.euro.who.int/__data/assets/pdf_file/0004/87484/PEP_EconValSum.pdf Accessed 13.10.10.

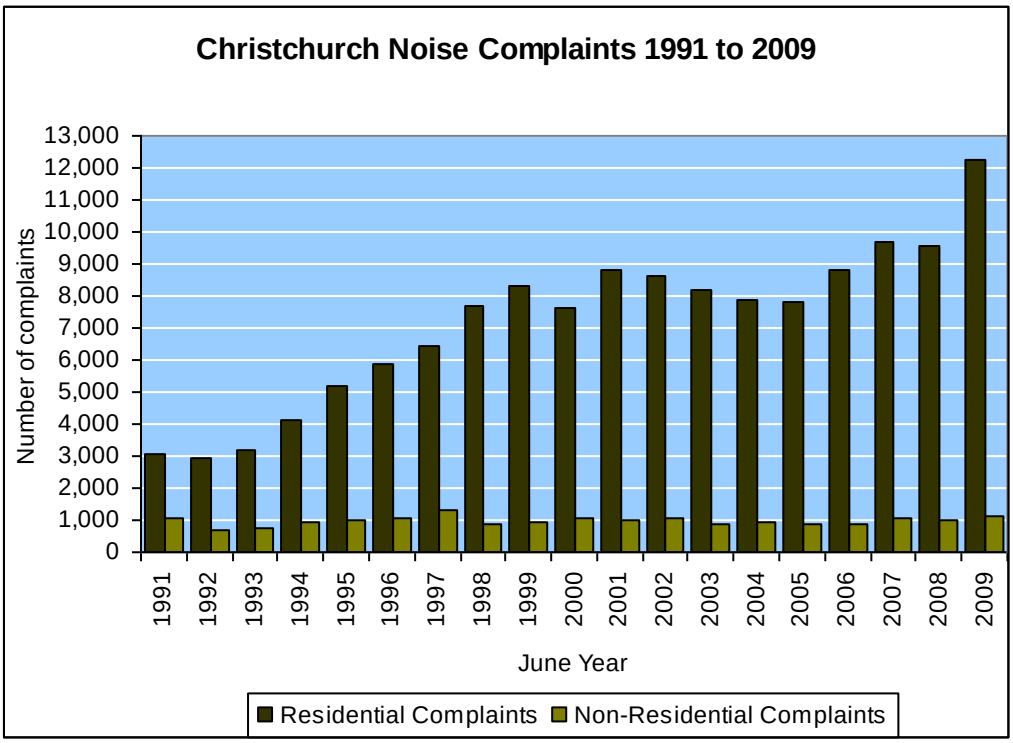
[2] Passchier-Vermeer, W., Passchier, W.F. 2000. Noise exposure and public health. *Environmental Health Perspectives* 108 Suppl 1, 123-131.

[3] Christchurch City Council http://resources.ccc.govt.nz/files/Amenity_1632_NoiseComplaints-docs.pdf Accessed 26.05.11.

From 2002 to 2005 there was a decrease in the total annual number of complaints, but since 2005, the number of complaints has generally increased.

The graph below shows the annual number of noise complaints by source (residential and non-residential) received by the Christchurch City Council, between June 1991 and June 2008. The majority of residential noise complaints relate to loud radios, stereos and televisions, with other complaints relating to musical instruments, alarms, parties, and construction noise. The majority of non-residential noise complaints relate to music (bands, concerts) and PA systems. Other non-residential noise complaints relate to motor vehicle operation/repair, construction, alarms, other machinery, and loud radios, stereos and televisions. The Christchurch City Council takes the view that, generally, excessive noise is unacceptable at any time. Loud and excessive noise can affect the way people feel about the area in which they live, and it can affect a person's overall quality of life.

Figure 1 Christchurch Noise Compliants 1991 to 2009



One source of excessive noise is from modified cars being driven at night. Although cars entering the country after June 2008 are required to have a noise level of no more than 90 decibels, cars that were already in the country on that date may have a noise level of no more than 95 decibels – which applies to the majority of modified cars. 95 decibels is significantly more likely to be deemed excessively noisy than 90 decibels and is more likely to cause hearing damage.

Impact on inequalities

As with air pollution, there is a body of evidence showing that lower-socio-economic groups are more at risk from vehicle traffic, including vehicular noise. Health effects are influenced by the number and type of vehicles per day, particularly vehicles with diesel engines, and the distance from the roadway to nearby homes, and other places such as schools where people may be exposed.

In Christchurch, more socially deprived neighbourhoods have a significantly higher level of exposure to traffic-related effects (including noise), and these areas have greater proportions of Maori, Pacific people, and migrant groups.[4]

Children are particularly sensitive to all types of noise. Aircraft and road traffic noise have been found to affect aspects of children's memory; road traffic noise and irrelevant speech have been found to impair reading speed and basic mathematics.[5] [6]

Solutions

The key piece of legislation for noise control is the Resource Management Act (1991) which codified and consolidated all legislation for all forms of pollution. Other relevant legislation is in the Civil Aviation Act and road transport laws. The RMA vests powers of control in local authorities, and has provisions for dealing with excessive noise, protecting noise sensitive activities, setting noise limits in decibels, restricting development near noisy activities, and requiring resource consents for other activities which may create unwanted noise. Acoustic standards NZS 6801 (measurement of environmental sound) and NZS6802 (environmental noise)[7] prescribe the manner in which environmental sound is measured and assessed in New Zealand. Standards include guidelines for best practice and recommended noise limits, provided an external source of technical detail that is nationally consistent and can be cited in regulations and by-laws.

The Christchurch City Council has set sound levels under the City Plan, appoints Noise Control Officers and enforces the RMA 1991 provisions regarding noise. The cruising bylaw[8] passed by the Christchurch City Council on 27 May 2010 is a practical example of a solution to the so-called boy racer noise problem. This bylaw prohibits cruising on selected city streets seven days a week between the hours of 10pm to 5am.

Land use options to reduce noise include traffic calming measures to make residential areas safer and quieter, the creation of pleasant environments for walking and leisure with landscaping and trees, parks and green spaces, and noise walls between residential areas and through roads to encourage active transport options within these areas. Zoning regulations to divert heavy traffic away from early childhood centres, schools, hospitals and elderly care homes and the creation of freight corridors reduce exposure to noise and air pollution from traffic.[9]

Data limitations

The CCC data above reflects only reported noise complaints; it does not reflect actual instances of excessive noise. This data excludes complaints regarding barking dogs. This is because the Christchurch City Council administers complaints about barking dogs as being 'dog complaints' rather than 'noise complaints'. In 2009, 2,061 complaints were made to the Council about barking dogs. Information about barking dogs is available from the Christchurch City Council website.[10]

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[4] Kingham, S., Pearce, J., Zawar-Reza, P. 2007. Op. cit.
[5] Ljung, R., Sorqvist, P., Hygge, S. 2009. Effects of road traffic noise and irrelevant speech on children's reading and mathematical performance. *Noise and Health* 11(45), 194-198.
[6] Matheson, M., Clark, C., Martin, R., van Kempen, E., Haines, M., Barrio, I.L., Hygge, S et al. 2010. The effects of road traffic and aircraft noise exposure on children's episodic memory: the RANCH project. *Noise and Health* 12(49), 244-254
[7] See http://www.standards.co.nz Standards are searchable by number or title for brief information about each one and can be ordered online but are not free to download.
[8] Christchurch City Council. 2010. Christchurch City Council Cruising Bylaw 2010. http://resources.ccc.govt.nz/files/CruisingBylaw.pdf Accessed 26.05.11.
[9] Capon, A.G., Blakely, E.J. 2007. Checklist for healthy and sustainable communities. *New South Wales Public Health Bulletin* 18, 51-54.
[10] http://www.ccc.govt.nz/homeliving/petsanimals/ownerresponsibilities/excessdogbarking.aspx Accessed 26.05.11.

Connections with other issues

Satisfaction with Leisure Time, Open and green spaces, Public Transport, Active Transport

Impact of the earthquakes

As time passes and these papers are updated the initial sections on the impact of the earthquake are going to be kept as an archive of what we thought the situation was at the time. Updates where possible are provided.

As at October 2011

Changes to roading may have resulted in heavier noisier traffic on some routes. Some noise pollution may result from increased levels of demolition and rebuilding. There is also the possibility with many meeting places in the central city closed that there are more gatherings at home which may have an impact on neighbourhood noise.

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