Northern Territory Government

FACT SHEET

What is Environmental Noise and why should I be concerned?

According to most acoustic practitioners noise pollution can be broadly defined as

"unwanted or offensive sounds that unreasonably intrudes into our daily activities ".

In the context of the human environment, noise is normally sound which causes annoyance or disturbs activities. We can generalise by saying that sound becomes unwanted when it:

- hinders speech communication;
- impedes thinking processes;
- interferes with concentration;
- obstructs activities (work or leisure); and
- presents a health risk due to hearing damage.

A number of factors contribute to problems of high noise levels, including:

- increasing population, particularly where it leads to increasing urbanisation and urban consolidation;
- activities associated with urban living generally lead to increased noise levels; and
- increasing volumes of road, rail and air traffic.

The primary sources of noise pollution include urban development -- road, air and rail transport; industrial noise; neighbourhood and recreational noise.

Whilst various elements of these noise sources are found as contributing factors to noise pollution, it is the last three that are the principle focus of attention when officers from the Pollution Hotline investigate noise as an environmental nuisance under the Territory's *Waste Management and Pollution Control Act 1998.*

Noise pollution is different from other forms of pollution thereby making it difficult to properly define. Noise is transient; once the pollution stops, the environment is free of it. This is not the case for chemicals, sewage, and other pollutants introduced into the air, soil, or water.

Other forms of pollution can be measured; scientists can estimate how much material can be introduced into the environment before the harm is done. In the case of noise pollution however, even though the level of noise pollution can be measured by identifying and measuring individual sounds, it is every difficult to monitor cumulative exposure to noise or to determine just how much may actually degrade the quality of the environment and may consequently damage human hearing. The definition of noise itself is highly subjective and thus broadly speaking, any form of unwelcome sound is noise pollution. (See the second fact sheet in the series entitled "If noise is sound, what is sound")

How do we measure Noise?

Descriptors or measurements indices used in the assessment of environmental noise are varied and respond to exposure time, time of day and time related aspects of the background noise. For describing the impact of noise on humans, the so-called Equivalent Sound Pressure Level (L_{eq}) needs to be calculated, that is, the mean value of sound intensity over time expressed in decibels. The significance of the L_{eq} is to be seen in the hypothesis that a noise that varies through time is equivalent in its disturbance on humans to a steady constant source of noise, over the same interval of time, if the noise level (sound pressure level) of the constant source of noise is equal to the L_{eq} value of the noise that varies through time. However, L_{eq} is not enough for the characterisation of environmental noise. It is equally important to measure and display the

maximum values of the noise fluctuations (L_{max}), preferably combined with a measure of the number of noise events (L_n). For most people, noise pulses are more annoying than a steady pulse of noise.

There are a number of other descriptors used in European countries and elsewhere, notably with regard to aircraft noise (eg, in the UK, The Netherlands and Norway). The use of such a variety of descriptors makes international comparisons of noise exposure difficult, if not impossible. However, as far as can be judged from the serious efforts being made by the scientific community, through various international bodies, such as the International Organisation for Standardisation (ISO) and the European Committee for Standardisation (CEN), it appears there is a preference towards those descriptors based around the concept of L_{eq}.

What noises really bug us?

Noise can cause annoyance and frustration as a result of interference, interruption and distraction. Activity disturbance is regarded as one of important indicators of the community noise impact (Australian Environment Council [AEC] 1988). The AEC national noise survey assessed a number of reactions to types of noise. The two predominant reactions related to disturbances to listening activities and sleep: 41% of respondents reported experiencing disturbance to listening activities and 42% to sleep. The main sources of noise that the respondents reacted to were traffic, barking dogs and lawn mowers.

Examination of noise pollution incident statistics for the NT over the last couple of years suggest that the predominant noise sources are construction noise 26%, entertainment noise 22% and the use of powered equipment in the suburbs 19%. All this points to the fact that the emphasis in noise data is forever changing and subject to changes in demographics. This causes difficulties for authorities in assessing the noise concerns of the community and instituting the appropriate level of legislation.

Health effects?

Research into the effects of noise on human health indicates a variety of health effects. People experiencing high noise levels (especially around airports or along road/rail corridors) differ from those with less noise expo sure in terms of: increased number of headaches, greater susceptibility to minor accidents, increased reliance on sedatives and sleeping pills, increased mental hospital admission rates.

Exposure to noise is also associated with a range of possible physical effects including: colds, changes in blood pressure, other cardiovascular changes, increased general medical practice attendance, problems with the digestive system and general fatigue

Although we often perceive of noise pollution as an immediate threat to our sanity and physical well-being or as antisocial behaviour in public places, what we often fail to perceive are the socio-economic consequences. Whilst noise is a significant environmental problem, it is often difficult to quantify associated costs. A United Nations based report (1995) on the social costs of land transport identified four categories of impact from transport noise:

- productivity losses due to poor concentration, communication difficulties or fatigue due to insufficient rest;
- health care costs to rectify loss of sleep, hearing problems or stress;
- lowered property values; and
- loss of psychological well-being.

And these are just the social costs, what about the economic costs attributed to poor planning and building design where conflicting activities occur together, or the increasing need for costly legislation and noise mitigation to counter these problems? Next time you are out in the shed, at work or out in pursuit of entertainment, pause to think of the consequences.

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