

# NOISE ANNOYANCE FROM SEASONAL INDUSTRY IN NSW

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## INTRODUCTION

Industry noise from scheduled premises in New South Wales (NSW), Australia is generally assessed with reference to the Industrial Noise Policy (2000) [1]. The Industrial Noise Policy (INP) is used by relevant Government Bodies for setting statutory limits to license noise sources from premises scheduled under the Protection of the Environment Operations Act (1997) [2]. The policy is designed for large and complex industrial noise sources but includes commercial premises, warehouses and maintenance repair facilities. Intrusive noise is one of the factors considered in the INP to quantify noise impacts and is defined as noise which is 5 dB above the background. No modifying factors are given to allow for industry which is seasonal. Seasonal industries are found, for example, in farming and food processing industries such as wineries, nut farms, sugar farms and fruit farms. These industries rely on harvesting and processing product over relatively short durations each year, typically two months to five months, but the duration can be as short as a few days or as long as six months. It is expected that people would prefer the noise to occur on for example 90 to 110 days rather than every day of the year if the level of noise and annoyance were the same. Hence it is hypothesised that the noise impact is less if the noise occurs on significantly fewer days in any one year. Industry would always be expected to reduce noise levels to the lowest level reasonably practicable regardless of criteria. Nevertheless there is a trade-off between acceptable levels above the background and annual duration, even if the

degree of that trade-off is difficult to identify. Codes of Practice have been developed by some NSW Local Authorities in an attempt to address this issue [3,4].

## SEASONAL NOISE SOCIAL SURVEYS

Limited research has been carried out to assess the difference between seasonal noise and continuous noise. However in one social survey [5] from the Netherlands, there was a difference between the day-evening-night level (DENL) for noise that occurred and every day of the year compared to noise that occurred only 90 days per year for the same noise impact. This difference was found to be 12 dB as shown in the examples in Table 1 below. As this is based on the same DENL averaged over a full year, the actual noise level would be 6 dB greater for the 90 day period to give the same noise exposure (i.e.  $12 - 10 \log_{10} (356/90)$  dB) assuming the rest of the year was comparatively quiet.

This research indicates that a modifying factor based on  $10 \log_{10} (365/n)$  dB(A), where  $n$  is the number of days per year that the seasonal noise occurs, could be applied to produce the same noise impact as for continuous noise. It may then be appropriate to apply this to the intrusive noise given in the INP. For example for noise which only occurs for 90 days per year the intrusive noise would be background plus 11 dB (i.e.  $5 + 10 \log_{10} (365/90)$  dB(A)), 110 days would be background plus 10 dB and six months would be background plus 8 dB (i.e.  $5 + 10 \log_{10} (365/182)$  dB(A)). Where cumulative noise from different seasonal industrial sources affects individual residences, this modifying factor may not be valid.

Noise Level (DENL)		Noise Impact
Continuous Noise Every Day of the Year	Seasonal Noise 90 Days per Year	
45 dB(A)	57 dB(A)	18% A Little Annoyed
		8% Annoyed
		3% Highly Annoyed
53 dB(A)	65 dB(A)	31% A Little Annoyed
		16% Annoyed
		7% Highly Annoyed

(Source: Miedema and Vos [5]). Note : The DENL applies a 5 dB penalty to evening and a 10 dB penalty to night time levels.

## FURTHER RESEARCH AND CONCLUSIONS

The social survey [5] supports the intuitive hypothesis that noise from seasonal industry, which may occur on significantly less days than one full year, will result in a lower noise impact for neighbouring residents than noise which is continuous for the whole year. However, the survey is only based on a single case study. This case study is indicative, but similar social surveys for Australian seasonal industry are required before firm conclusions can be reached.

Whilst all industry should minimise noise to the lowest level reasonably practicable, a modifying factor based on  $10 \log_{10} (365/n)$  dB(A) could be added to the intrusive noise criterion. This is one additional factor when considering realistic noise impact assessments for seasonal industry within NSW.

## REFERENCES

1. *New South Wales Industrial Noise Policy* (EPA 00/1) January 2000
2. The Protection of the Environment Operations Act (1997) commenced operation on 1 July 1999.
3. Griffith City Council and Leeton Shire Council have produced a *Draft Frost Control Fan Policy* (September 2000)
4. Lismore City Council *Code of Practice for Noise Management of On-Farm Processing* (February 2003) [http://www.lismore.nsw.gov.au/content/planning/Noise\\_Code\\_Final\\_01-03-03.pdf](http://www.lismore.nsw.gov.au/content/planning/Noise_Code_Final_01-03-03.pdf)
5. H.M.E. Miedema and H. Vos "Noise annoyance from stationary sources: Relationships with exposure metric day - evening - night level (DENL) and their confidence intervals". *J. Acoust. Soc. Am.* **116**, 334 - 343 (2004)



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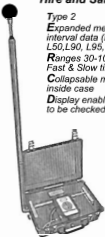
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