Review of documents relating to Wind Turbine Syndrome

Prof Peter Seligman **19 November 2012**

1. Effects of Industrial wind turbine noise on sleep and health. Nissenbaum et al

This paper uses three scales, two related to sleep disturbance and one to general health.
Two groups are surveyed, one living at 3.3 km or more and the other at 1.4 km or less. The study claimed that participants living near turbines had "significantly worse" sleep but in the same paragraph: "did not reach statistical significance". Thus the language was suggesting one thing whilst the mathematics another.

In the case of the general health measure, statistical significance *was* observed. Whilst this could be seen as conclusive, it does not take into account the pre-existing stress that may have been due to worry about the presence of turbines. This factor is alluded to and it is stated that 41% of the observed effects could be attributed to attitude and visual impact. If this is taken into account, the above significance may be in question.

2. Wind turbine noise and health-related quality of life of nearby residents: a cross sectional study in New Zealand, Shepherd et al.

This study is similar to the one above and compares groups living within 2 km of turbines with those living far away. A quality of life measure is used. The study reports no difference between the groups on physical, psychological, social, environmental measures. On amenity there was a significant difference. Again, if wind turbines have already become an issue within the community, there is no way of separating the dislike of them from any real cause.

The power of suggestion and worry is illustrated in one submission to the previous Senate Enquiry which stated: "I felt nauseous when I heard that a wind farm was proposed in our area". How nauseous is such a person going to be when a wind farm is actually built?

3. Responses of the ear to low frequency sounds, infrasound and wind turbines, Salt et al.

This paper is important since it is published in a peer reviewed journal by a well-known reputable researcher. The study makes use of a guinea pig model and otoacoustic emissions as a metric. Mammalian cochleae have both inner and outer hair cells and the paper suggests that the outer hair cells have a high sensitivity to infrasound leading to physiological phenomena that the subject cannot hear. It is first suggested that only a proportion of subjects with a clinical condition [1] may be sensitive to this effect, but later does not exclude the general population[2]. The results need to be verified in a human model.

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[1] There are, however, abnormal states in which the ear becomes hypersensitive to infrasound. (Abstract)

[2] The concept that an infrasonic sound that cannot be heard can have no influence on inner ear physiology is incorrect. (Conclusion)

4. Steven Cooper Appendices C and D

Appendix C states that the author is neither anti-windfarm nor pro-windfarm but then takes the viewpoint that residential rooms in rural areas may be between 10 and 20 dBA and suggests it is a fundamental issue of concern that the guidelines suggest that 30 dBA is acceptable. Since almost any human activity will exceed the 10 – 20 dBA mentioned, all manner of human activity would be also unacceptable. The question would be – why should wind turbines be placed in a separate category?

Appendix D addresses the issue of the noise signature of wind turbines and suggests that amplitude modulation is of particular significance. This is a point which the Melbourne Energy Institute in association with the department of Psychology and the school of Audiology, University of Melbourne, will be studying. It will investigate the points made by Salt et al in a human rather than animal model and do this in a double blind study with a large number of subjects. The MEI study will test the type of signals depicted in figures 11 and 15 in Appendix D.

General remark

Although the MEI due to its charter would be deemed to be pro-windfarm, establishing the presence or otherwise of a physiological effect leading directly to health effects would be highly beneficial to both camps by allowing scientifically based guidelines to be established.