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ADVERSE HEALTH EFFECTS OF WIND TURBINES, & recent developments

There have been an increasing number of reports globally, particularly in the last 10 years, of people adjacent to wind developments developing a range of symptoms not previously described in the medical literature. At the same time turbine towers are getting taller, their blades longer, both factors increasing their power output but also their noise emissions, and they are being built closer to larger rural populations, in order to be close to transmission lines.

The first Medical Practitioner to describe the new illness in a formal study was a UK GP (Dr Amanda Harry), followed by an Australian GP Dr David Iser (Toora, Victoria) and most recently Dr Robert McMurtry, who also used Dr Amanda Harry's survey as a basis for the Canadian self reporting survey. All found exactly the same range of symptoms being reported.

Dr Nina Pierpont (an American Paediatrician) progressed the research with her landmark peer reviewed case series crossover study, which examined the individual case histories of the members of 10 families from around the world, who had lived adjacent to wind developments. She meticulously recorded details of their health prior to, during, and after exposure to the turbines. They left their homes because of severe ill health in one or more family members. What Dr Pierpont described was a pattern of symptoms which developed or were exacerbated by the operation of the turbines, and which disappeared when the subjects left their homes, only to return again when they returned back to their homes. She called the constellation of symptoms "Wind Turbine Syndrome". **Her study, together with the raw data / case histories, has been published in a book with the same name**, available from **windturbinesyndrome.com**.

Other Medical Practitioners who have subsequently become concerned and involved in the international research effort include Dr Robert McMurtry (Canada), Dr Michael Nissenbaum (USA), Dr Christopher Hanning (UK), and Dr Noel Kerin (Canada). Some of the Acousticians with extensive experience in this field of work who are independent of the wind industry and very concerned about what is going on include Dr Bob Thorne (Australia & NZ), Mr Rick James (USA), Mr George Kamperman(USA), and Dr Daniel Shepherd (New Zealand). There are other Acousticians, similarly independent of the wind industry, who are also very concerned.

Two organisations have been set up by concerned professionals specifically to advocate for

affected residents, to collect further information and to ensure that independent research into the described adverse health effects of wind turbines is carried out as soon as possible. They are the Society for Wind Vigilance (**windvigilance.com**) in Canada, and the Waubra Foundation in Australia.

The symptoms and health problems include but are not limited to the following:

severe chronic sleep deprivation (from audible turbine noise, from waking up anxious and hyperalert, and from otherwise disturbed sleep including markedly increased nocturnal urination)

severe headaches, including exacerbation of migraines

tinnitus (buzzing/ringing in one or both ears, both new onset and exacerbation of previous condition)

ear pressure sensations (in one or both ears, uncomfortable and sometimes painful, especially if previous tympanic membrane surgery & scarring)

hyperacusis (extreme noise sensitivity to 'normal' sounds)

nausea (sometimes severe)

motion sickness, vertigo, and balance problems

visual blurring, which occurs with turbine operation

irritability, extreme anger, and other mood disturbances

memory and cognitive deficits, which increase with prolonged exposure, and do not always completely resolve – children are showing impaired learning

depression, sometimes severe, with suicidal ideation

anxiety, with episodes of extreme panic, sometimes waking them up at night (children are waking with night terrors, and bed wetting, never previously experienced)

high blood pressure (hypertension) which can be a new problem, or an exacerbation of a previous condition, and which is sometimes dangerously high (acute hypertensive crisis)

tachycardia, coinciding with turbine operation

RECENT DEVELOPMENTS

Most recently in Australia I have heard descriptions of angina, chest tightness, heart attacks and acute episodes of extremely high blood pressure (known as acute hypertensive crises) which are occurring when the turbines are operating. Most concerning is the apparent concurrence of heart attacks and strokes with turbine operation. These have occurred at a number of different wind developments, in all three states, and require urgent further analysis. I am hearing from my Canadian colleagues that the same reports are emerging there.

At Waubra particularly, a number of affected residents have started measuring their blood pressures at multiple times during the day and overnight, if they wake up, and some are finding that both their blood pressures and their heart rates are elevated when the turbines are operating, but decrease when either they are away from home, or when the turbines are turned off for any length of time (days).

Further independent research is urgently required, as some of these clinical effects are occurring at greater distances than previously described (especially some of the body vibrations). **Specifically, hypertension in conjunction with turbine operation has been**

reported up to 5km away, and body vibrations and nocturnal wakening in a panicked state up to 10km.

Acousticians independent of the wind industry have confirmed that with these large modern turbines, sound waves (audible and infrasound) they generate could certainly travel that distance in certain weather conditions, particularly when the turbines are placed on top of ridges and hills. Most recently Mr Rick James has confirmed he has measured pulsatile infrasound 1500 ft from a turbine in Ontario at 90 dB SPL, much higher than previously measured.

There are published peer reviewed scientific studies which confirm that the effects of exposure to infrasound are cumulative (Perrson & Waye,), can affect cognition & memory (ibid), can affect mood & work performance (ibid), can affect the inner ear (Salt, A) and can affect blood pressure, heart rate, and mood (Qibai & Shi).

AREAS identified REQUIRING FURTHER INDEPENDENT RESEARCH

1. pulsatile infrasound and low frequency noise measurement concurrent with symptoms being experienced by affected residents in their homes (Dr Bob Thorne et al's proposed research)
2. in situ sleep studies, correlated with turbine operation, and concurrent measurement of audible sound and infrasound
3. concurrent continuous ambulatory blood pressure monitoring with turbine operation and infrasound measurement
4. the effect of long term chronic infrasound exposure on adults
5. the effect of chronic infrasound exposure on children & unborn babies, (particularly their growth, development, cognitive development, & learning)

ALL REFERENCES ARE AVAILABLE ON REQUEST

Dr Sarah Laurie, Medical Director, Waubra Foundation, 6th February, 2011