

## **Submission to: Inquiry into Renewable Energy (Electricity) Amendment**

**(Excessive Noise f**

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### **My expertise**

I am a professor of public health at the University of Sydney's School of Public Health. My primary discipline is sociology and I am an elected Fellow of the Academy of Social Sciences in Australia. My full curriculum vitae is here <http://tobacco.health.usyd.edu.au/assets/pdfs/publications/CV.pdf>. My work has been cited over 6600 times (see <http://scholar.google.com.au/citations?user=PDE8U4UAAAAJ&hl=en>) and I have received many national and international awards for my research, including the 2008 NSW Premier's Cancer Researcher of the Year award.

I have no competing interests to declare. I have no financial or in-kind support from any wind energy company or agents acting on their behalf.

### **"Modern health worries"**

I have long had a scholarly interest in risk communication. In particular, I am interested in significant, high-risk health problems which are under-rated by the public (eg: smoking), and in low-risk putative health problems which are over-rated by some members of the public causing them to worry, panic and sometimes express symptoms. It is my view, for reasons set out below, that concerns about the health effects of wind turbines fall into the latter category.

The research literature on this area is sometimes referred to as "modern health worries" [see: <http://www.ncbi.nlm.nih.gov/pubmed/11448708>] and examines in particular how sections of the community fear new technologies, sometimes to the point of making themselves "ill" with worry. There is a long history of such worries which includes the early telephone, televisions, electric blankets, microwave ovens, mobile phone towers and phones, wifi, "smart" electricity meters and wind turbines. I have a co-authored paper on the psychogenic and sociogenic aspects of "wind turbine syndrome" under peer review with an international journal and believe that many of the characteristics of epidemic mass hysteria described in an earlier review [Boss, 1999 attached as Appendix 1]

are likely to apply to the phenomenon of reported ill-effects from exposure to wind turbines.

A health problem that has psychogenic origins is one which arises because of *beliefs* about an agent (such as a wind farm) being harmful rather than because the agent is actually harmful. A constellation of symptoms suggestive of organic illness, but without an identifiable cause, that occurs between two or more people who share beliefs about the cause of those symptoms. Sociogenic illness is a medical condition that occurs to multiple individuals within a social group, but does not seem to have a common organic cause. These illnesses can also be called “communicated diseases” because they tend to spread by being talked about.

Those experiencing symptoms that they attribute to exposure to the agent often do genuinely experience those symptoms, which can be objectively measured. However, experimental evidence is often able to show that when people who believe themselves to be susceptible to being harmed by such agents are exposed to “sham” (dummy or inert) agents and told that they are being exposed to the “real thing”, that they continue to report experiencing the symptoms.

Scholars have known about this phenomenon for centuries. Francis Bacon (1561-1626) wrote “Infections ... if you fear them, you call them upon you.” Today, this phenomenon is known as the nocebo effect. Nocebo effects occur when people are told that an agent is harmful (when it is not) and then go on to experience the harms that are said to arise. A recent review of nocebo effects is attached as Appendix 2.

There are several compelling reasons why a health complaints said to be caused by exposure to wind farms are highly likely to be psychogenic and constitute nocebo effects.

### **1. A minority of wind farms attract any health or noise complaints.**

In recent weeks I have been in contact with the owners of all wind farms in Australia, in an attempt to compile data on the history of complaints about health problems said to be caused by exposure to wind turbines. Appendix 3 shows a table showing a partial list of Australian wind farms (partial because I have yet to obtain data from those not listed). The table shows the number of turbines; the date the farms commenced operation; the number of residents living within a 5km radius of the farm; whether there have been any health complaints reported to the companies running the farms; the number of individuals making such complaints; the earliest dates of those complaints; and whether there are any anti-wind farm groups active in the local area (whether local or “imported”).

As can be seen, of 35 farms for which I have been able to (to date) obtain data, 14 have been subject to complaints by at least one person. The modal (most common) number of people complaining about wind farms causing them to have symptoms is 1 person. The great majority of people living near wind farms in Australia since they commenced operation in 1993 (19 years ago in Esperance, Western Australia) have never complained about any health problems.

There is only one wind farm in Australia (Waubra) where more than six people have complained, and only two (Waubra and Oaklands in Victoria) where more than 5 people have complained. In Oaklands, the complaints actually occurred before the wind farm commenced operation. In the entire state of Western Australia, there are no records of health complaints being made about any wind farm.

It is sometimes argued that only “susceptible” people are adversely affected by wind turbines. If this were true, it is difficult to hypothesise why an entire state and many entire wind farms would have no such susceptible people living near them, unless psychogenic factors were involved.

Indeed, while there are now an estimated 200,000 wind turbines operating around the world, complaints are mostly concentrated in local “hotbeds” of anti wind farm activism. In Canada, for example, the province of Ontario has by far the largest concentration of complaints compared to other regions. Many nations with wind farms do not appear to have any history of complaints. This is particularly so in nations like Denmark and Germany where the dominant model of wind farm ownership is communal. Those who directly benefit from wind farms, whether through the electricity generated or the rent earned by hosting turbines on their land, rarely complain. This relationship has been previously noted by others. It is hard to avoid the conclusion that money is not an “antidote” to wind farm “illnesses”.

Anti-wind farm interest groups have recently highlighted the case of a turbine host in South Australia who has recently complained about ill-effects from turbines. This man “co-habited” with wind turbines for several years without any complaint but now believes they are a problem. Your committee would do well to invite the energy company concerned to comment on the circumstances involved which are apparently not all they may seem to outsiders.

## **2. Wind turbines are said to cause acute effects, but complaints are not often made for years**

Further, despite claims by anti-wind farm activists that even brief exposure to wind turbines can cause almost immediate onset of symptoms, many of the complaints recorded began months or sometimes years after the wind farms began operating. This is inconsistent with there being “acute” effects from exposure.

## **3.Complaints follow publicity about “wind turbine syndrome”**

Wind turbines have been operating in parts of North America and Europe for over 20 years. The earliest records of health complaints date from early years in the current millennium where two general practitioners (in Wales and Toora, Victoria) made claims that some of their patients had health problems that might be attributed to wind farm exposure. These reports were never published in any peer reviewed journal. Complaints seemed to go dormant for about 6 years and

then accelerated from 2008 with the publication of a vanity-press book by US paediatrician Nina Pierpont who coined the expression “wind turbine syndrome”. Thereafter, we saw rapid growth in the phenomenon, but this effect has largely been confined to English-speaking nations, and as explained, only a small number of parts of those nations.

#### **4. An unbelievable number of diseases and symptoms are being attributed to wind turbines**

Appendix 4 shows a list of 198 symptoms and diseases said to afflict humans, animals and even earthworms exposed to wind turbines. These claims have been made on websites published by community groups who are overtly anti-wind farms. It is important to understand that in the serious peer-reviewed scientific literature, there are no research papers corroborating any of these claims. The diffuse and sometimes bizarre nature of many of these claims, considered alongside the absence of any reputable research confirming such relationships in the peer reviewed literature, suggests that this is a phenomenon which is a prime candidate for being considered a contemporary example of psychogenic illness. I know of no agent that even causes even a small fraction of all the symptoms and diseases said to be caused by wind turbines in these websites. The extent of this list and the language in which it is often expressed are redolent of Biblical Old Testament descriptions of plagues and pestilences.

#### **17 reviews of the evidence now available**

There are now 17 published reviews of the available evidence about whether exposure to wind turbines causes health problems and about whether infrasound can harm human health. Appendix 5 lists all those reviews, and provides extracts from each of those reports on the various broad claims that have been made about wind turbines and health. As will be seen, all of these reviews make strong statements that the evidence is very poor that wind turbines in themselves cause problems. What many of these reviews conclude is that:

- A small minority of exposed people claim to be adversely affected by wind turbines
- Pre-existing negative attitudes to wind turbines are more predictive of adverse health effects and annoyance than are objective measures of actual exposure
- Being able to see wind turbines is similarly predictive of annoyance
- Deriving income from hosting wind turbines on one’s land may have a “protective effect” against annoyance and health symptoms [here, note that claims made by anti-wind farm groups that turbine hosts sign “gag” clauses which prevent them from complaining are highly misleading. I have seen contracts which have no such clauses and those which do would be unenforceable: no contract could prevent a law suit for the common law tort of negligence.]

**My conclusions** Beliefs that wind turbines somehow cause genuine health problems, and that objections raised by citizens based on health claims should therefore be taken at face value are highly questionable. Social policy and legislation such as that proposed by the Amendment being proposed should never be based on mere claims about alleged dangers because of the possibility that such claims are baseless and reflect extraneous agenda such as people simply not “liking” a development for aesthetic reasons.

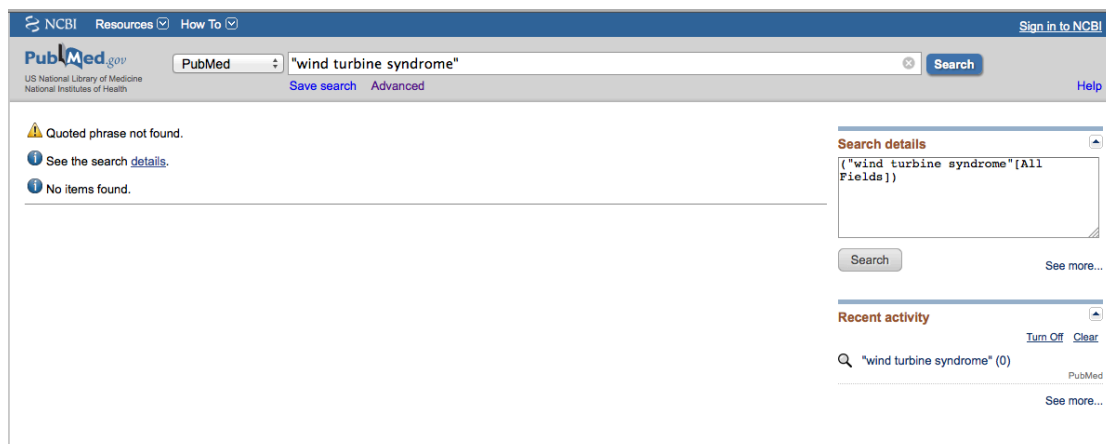
Anti-wind farm propagandists are fond of talking about “many” people walking away from their houses and being unable to sell them because of nearby wind turbines. Such claims are never accompanied by lists of such properties where such claims could be independently checked. In rural Australia, people walk off unsalable property for many reasons every year. Often these reasons are known to neighbors and people in the area and could be investigated.

I would submit that the sheer weight of evidence as adjudicated now in 17 separate reviews (see Appendix 4) underlines that claims that wind turbines can adversely affect health are not evidence-based. As you are aware, the NHMRC is currently reviewing the evidence again. If that review should reach similar conclusions, there will be 18 reviews consistent in their conclusions that turbines do not directly affect health.

I now provide some background information on two “authorities” on wind turbines and health and one set of “research papers” often cited by anti-wind interest groups.

### **Nina Pierpont and Wind turbine syndrome**

The term “wind turbine syndrome” was coined by a US general practitioner, Nina Pierpont. The term does not appear even once in the US National Library of Medicine’s massive PubMed database (<http://www.ncbi.nlm.nih.gov/pubmed/>), a fully searchable list of 22 million published papers in the health and medical research fields.



Pierpont has become the global medical “guru” for a small movement virulently opposed to wind farms. She calls wind turbines “an industrial plague”. Plagues

throughout history have killed millions, while exposure to wind turbines have so far killed no-one and seem likely instead to contribute to saving hundreds of millions of lives over future decades through their contribution to reducing greenhouse gases. Pierpont's language gives us an immediate sense of her objectivity.

Her reputation as an authority on "wind turbine syndrome" is a 2009 [vanity press book](#) containing descriptions of the health problems of just 10 families (38 people, 21 adults) in five different countries who once lived near wind turbines and who are convinced the turbines made them ill. With approximately 200,000 turbines worldwide and uncounted 1,000s living around them, her sample borders on homeopathic strength representativeness.

So what are some of the problems with her research that any independent reviewer would raise? First, she says nothing about how the 10 families she interviewed were selected. She says "I chose a cluster of the most severely affected and most articulate subjects I could find". Why choose "articulate" subjects and not randomly selected residents living near wind farms? More fundamentally, why did she not make any attempt to investigate controls (people living near turbines who do not report any illness or symptoms they attribute to turbines)?

Amazingly, she interviewed them all by phone, did not medically examine any of her subjects nor access their medical records. So her entire "study" is based on her aggravated informants' accounts. Even here, she does not describe who among the 10 families she interviewed, nor consider for a moment questions of accuracy about others giving "proxy" reports about others in their family. This is beyond sloppy.

Pierpont provides pages of information on her informants' claims about their health while living near turbines. She also provides summaries of the prevalence of various health problems in these families prior to the arrival of the turbines. These are revealing. A third of the adults had current or past mental illness and a quarter had pre-existing migraine and/or permanent hearing impairment. These rates are much higher than those in the general population. In other words, her subjects were a group who are unrepresentative of the general population.

### **"Vibro-acoustic disease"**

Another "disease" known as "vibro-acoustic disease" said to be linked to exposure to wind farms has been promoted by a research group at Portugal's Lusophona University (ranked academically at 5279 of 9805 universities throughout the world <http://academyrank.com/academy.php?name=Lusophone%20University%20of%20Humanities%20and%20Technologies>). One member of that team, Mariana Alves-Pereira, gave a live [video presentation](#) at a NHMRC forum on windturbines and health.

However, vibroacoustic disease is not a disease recognized in the [International Classification of Diseases](#), the international standard for classifying diseases. The UK's [Health Protection Agency](#) reviewed the evidence on infrasound and concluded: "While those working in very high levels of audible noise may suffer some adverse consequences ... there is no evidence that infrasound at levels normally encountered in the environment will lead to the development of vibroacoustic disease. Further this disease itself has not gained clinical recognition... The available data do not suggest that exposure to infrasound below the hearing threshold levels is capable of causing adverse effects."

Indeed, as I explain below, it looks like the main people who recognize vibroacoustic disease are Alves-Pereira's Lisbon group who promote the concept through their own research. Alves-Pereira's presentation to the NHMRC forum can be [viewed here](#), commencing at 1hr15m44s. She spent much of her time talking about a case study of one family in a house adjacent to a wind farm. Slide #100 shows an arrow pointing to the house concerned. As can be seen, there are many other houses in the area downwind of the turbines, but strangely, her research group apparently conducted no investigations of the residents in any of these. A young boy in the house was having problems of losing interest at school – an extremely common problem — and Alves-Pereira's claim was that exposure to wind turbines was a plausible explanation. No other possible explanation was even considered.

To further press home her case, she talked of problems in "boxy" or "club" foot found in four of the householder's thoroughbred horses kept at the property (slide #105). This problem too, she suggested might be connected with exposure to wind turbines. She carefully explained that of five young horses examined, four had boxy foot. The one that did not was acquired, not bred on the farm, and one other acquired horse also had boxy foot. From that, the audience were presumably supposed to understand that hard evidence was thus available for wind farms causing equine feet deformities. This sort of causal attribution is frankly embarrassingly amateur and scientifically primitive. Boxy foot is a common problem in horses.