

## ***ADDRESSING CONCERNS WITH WIND TURBINES AND HUMAN HEALTH***

**Revised: April 2009**

At present there are well over 10,000 wind turbines installed and operating in North America, and tens of thousands of people who live and work in proximity to these wind turbines. Of these individuals, a very small number have claimed that their health has been negatively impacted by wind turbines. However, surveys of peer-reviewed scientific literature have consistently found no evidence linking wind turbines to human health concerns. It is important to note that all wind energy projects are required to undertake environmental assessments that assess the potential impacts of wind turbines on ecosystems and human health. The studies also ensure that the installations meet strict government regulations with respect to sound.

Certain individuals contend that wind turbines can adversely impact the health of individuals living in proximity to wind turbines. A prominent advocate of this view is Dr. Nina Pierpont of Malone, New York who claims that people living in proximity to wind farms may suffer from “Wind Turbine Syndrome”. This view, however, is not supported by scientists who specialize in acoustics, low frequency sound and related human health impacts. It is important to point out that none of the work by Dr. Pierpont - or others claiming similar impacts – has been published in peer-reviewed journals. This fact raises questions as to the scientific validity of these assertions.

The following is a concise summary of articles and publications on the subject from reputable sources in Europe and North America:

1. *“Infrasound from Wind Turbines – Fact, Fiction or Deception?”* by Geoff Leventhall in Vol. 34 No.2 (2006) of the peer-reviewed journal Canadian Acoustics. This paper looks at the question of whether or not wind turbines produce infrasound at levels that can impact humans. It directly addresses assertions frequently made by Dr. Nina Pierpont, author of a recent book entitled “Wind Turbine Syndrome”. “In the USA, a high profile objector (Nina Pierpont of Malone NY) placed an advertisement in a local paper, consisting entirely of selected quotations from a previously published technical paper by van den Berg (Van den Berg 2004). However the comment “[i.e. infrasonic]”, as shown in Fig 3, was added in the first line of the first quotation in a manner which might mislead naive readers into believing that it was part of the original. The van den Berg paper was based on A-weighted measurements and had no connection with infrasound. So, not only is the advertisement displaying the advertiser’s self deception, but this has also been propagated to others who have read it. [...] Claims of infrasound are irrelevant and possibly harmful, should they lead to unnecessary fears.”  
[www.wind.appstate.edu/reports/06-06Leventhall-Infras-WT-CanAcoustics2.pdf](http://www.wind.appstate.edu/reports/06-06Leventhall-Infras-WT-CanAcoustics2.pdf)
2. *“Context and Opinion Related to the Health Effects of Noise Generated by Wind Turbines”*, Agence Française de Sécurité Sanitaire de l’Environnement et du Travail

(Affset), 2006. Afsset was mandated by the Ministries responsible for health and the environment to conduct a critical analysis of a report issued by the *Académie nationale de médecine* that advocated the use of a minimum 1,500 metre setback distance for 2.5 MW wind turbines or more. The Affset report concluded that “It appears that the noise emitted by wind turbines is not sufficient to result in direct health consequences as far as auditory effects are concerned. [...] A review of the data on noise measured in proximity to wind turbines, sound propagation simulations and field surveys demonstrates that a permanent definition of a minimum 1,500 m setback distance from homes, even when limited to windmills of more than 2.5 MW, does not reflect the reality of exposure to noise and does not seem relevant.” <http://www.afsse.fr/index.php?pageid=1862&parentid=523> (in French only – please contact CanWEA for an English translation of this text)

3. Summary of research on wind turbines, noise and possible health effects, commissioned by the UK Government’s Department for Business, Enterprise & Regulatory Reform:
  - a. In 2006 the UK Government published a study by Hayes McKenzie which investigated claims that infrasound or low frequency noise emitted by wind turbine generators was causing health effects. The report concluded that there is no evidence of health effects arising from infrasound or low frequency noise generated by wind turbines. The report went on to note that a phenomenon known as Aerodynamic Modulation (AM) may be the cause of these complaints. ([www.dti.gov.uk/energy/sources/renewables/publications/page31267.html](http://www.dti.gov.uk/energy/sources/renewables/publications/page31267.html))
  - b. The Government then commissioned experts at Salford University to investigate Aerodynamic Modulation and the broader issue of noise from wind turbines. The Salford research looked at 133 wind farms and concluded that “... in terms of the number of people affected, wind farm noise is a small-scale problem compared with other types of noise; for example the number of complaints about industrial noise exceeds those about windfarms by around three orders of magnitude” and that “The low incidence of AM and the low numbers of people adversely affected make it difficult to justify further research funding in preference to other more widespread noise issues.” [http://usir.salford.ac.uk/1554/1/Salford\\_ Uni\\_Report\\_Turbine\\_Sound.pdf](http://usir.salford.ac.uk/1554/1/Salford_ Uni_Report_Turbine_Sound.pdf).
  - c. Based on these findings, the U.K. Government published a statement indicating that “Government does not consider there to be a compelling case for further work into AM and will not carry out any further research at this time.” <http://www.berr.gov.uk/files/file40571.pdf>
  
4. “*Health impact of wind turbines*”, prepared by the Municipality of Chatham-Kent Health & Family Services Public Health Unit. This is a comprehensive review of available literature on the subject. This paper concludes and concurs with the original quote from Chatham-Kent’s Acting Medical Officer of Health, Dr. David Colby: “In summary, as long as the Ministry of Environment Guidelines for location criteria of wind farms are followed, it is my opinion that there will be negligible adverse health impacts on Chatham-Kent citizens. Although opposition to wind farms on aesthetic grounds is a legitimate point of view, opposition to wind farms on the basis of potential adverse health

consequences is not justified by the evidence.” <http://www.chatham-kent.ca/NR/rdonlyres/CA6E8804-D6FF-42A5-B93B-5229FA127875/7046/5a.pdf>

5. “*Wind Turbine Acoustic Noise*”, A White Paper by Dr. Anthony Rodgers at the University of Massachusetts at Amherst. This paper looked into the issue of both sound and infrasound (low frequency sound) and concluded “There is no reliable evidence that infrasound below the perception threshold produces physiological or psychological effects.”  
[http://www.ceere.org/rerl/publications/whitepapers/Wind\\_Turbine\\_Acoustic\\_Noise\\_Rev\\_2006.pdf](http://www.ceere.org/rerl/publications/whitepapers/Wind_Turbine_Acoustic_Noise_Rev_2006.pdf)
6. “*Recent Studies of Infrasound from Industrial Sources*” by William Gastmeier and Brian Howe, presented at the Canadian Acoustical Association, October 2008. The authors “conducted several infrasound studies using refined measurement methods to isolate the infrasound energy produced by industrial sources from naturally occurring infrasound in the environment.” The results conclude “that infrasound from wind turbine generators is well below any realistic human perception limits.” Available from the Canadian Acoustical Association, [www.caa-aca.ca](http://www.caa-aca.ca)
7. “*Electricity generation and health*” in the peer-reviewed journal The Lancet. The paper concludes that “Forms of renewable energy generation are still in the early phases of their technological development, but most seem to be associated with few adverse effects on health” <http://www.ncbi.nlm.nih.gov/pubmed/17876910>
8. “*Energy, sustainable development and health*”, World Health Organisation, June 2004. The study finds that “Renewable sources, such as photovoltaic and wind energy, are associated with fewer health effects. [...] The increased use of renewable energy, especially wind, solar and photovoltaic energy, will have positive health benefits, some of which have been estimated.” There is also a table on page 79 showing the relative health effects of nearly all sources of energy, which clearly shows wind as negligible.  
<http://www.euro.who.int/document/ehc/ebakdoc08.pdf>

These findings clearly show that there is no peer-reviewed scientific evidence indicating that wind turbines have an adverse impact on human health.