

**Wind Energy Industry Acknowledgement**  
**of**  
**Adverse Health Effects**

**Part 1 Conclusion and Executive Summary**

**An Analysis of the American/Canadian Wind Energy Association  
sponsored  
“Wind Turbine Sound and  
Health Effects  
An Expert Panel Review, December 2009”**

**Prepared by  
The Society for Wind Vigilance**

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*\* Appended January 18, 2010 to include document production details.  
Note: the contents of this analysis have not been altered.*

**FORWARD**

Wind Turbine Sound and Health Effects, An Expert Panel Review (A/CanWEA Panel Review) was prepared for and sponsored by the American Wind Energy Association (AWEA) and the Canadian Wind Energy Association (CanWEA).

In response, an analysis was conducted by The Society for Wind Vigilance of the A/CanWEA Panel Review. Details of the analysis are included in Table 1 of this document.

The summary and related points cover a broad spectrum of claims. For convenience the remainder of the analysis and critique is done in a tabulated format of point - counter point. The volume of material necessitated this approach and hopefully will enhance the clarity of the critique being put forward.

The method utilized was to excerpt each of the claims and place it in the context of authoritative and contrary information. In addition an effort has been made to identify the errors of omission as well as those of commission.

**CONCLUSION**

It is apparent from this analysis that the A/CanWEA Panel Review is neither authoritative nor convincing. The work is characterized by commission of unsupportable statements and the confirmation bias in the use of references. Many important references have been omitted and not considered in the discussion. Furthermore the authors have taken the position that the World Health Organization standards regarding community noise are irrelevant to their deliberation - a remarkable presumption.

There is no medical doubt that audible noise such as emitted by modern upwind industrial wind turbines sited close to human residences causes significant adverse health effects. These effects are mediated through sleep disturbance, physiological stress and psychological distress. This is settled medical science.

There are many peer-reviewed studies showing that infra and low frequency sound can cause adverse health effects, especially when dynamically modulated. Modern upwind industrial scale turbines of the types now being located in rural areas of North America require study. The extent to which infra and low frequency noise from wind turbines inside or outside homes causes direct adverse effects upon the human body remains an open question - there is no settled medical science on this issue as of yet.

Perhaps the most egregious conclusion is that no more research is required. That statement implies that the science is settled which quite simply is false. It also demonstrates a disdain for the scientific method itself.

There is but one conclusion: independent third party studies must be undertaken to establish the incidence and prevalence of adverse health effects relating to wind  
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Note any errors or omissions are unintentional

turbines. Beyond that a deeper understanding of the potential mechanisms for the impacts must be elucidated in order to define the mechanisms by which the sleep disturbance, stress and psychological distress occur.

In contrast to the statement of the A/CanWEA Panel Review, our view is that a great deal of research is required for the protection of people's health.

### **EXECUTIVE SUMMARY**

The conclusions of the A/CanWEA Panel Review are not supported by its own contents nor does it have convergent validity with relevant literature.

The A/CanWEA Panel Review acknowledges that wind turbine noise may cause annoyance, stress and sleep disturbance and that as a result people may experience adverse physiological and psychological symptoms. It then ignores the serious consequences.

World Health Organization identifies annoyance and sleep disturbance as adverse health effects.<sup>1</sup>

In 2009 the World Health Organization released a peer reviewed summary of research regarding the risks to human health from noise induced sleep disturbance. Some of the adverse health effects documented include fatigue, memory difficulties, concentration problems, mood disorders, cardiovascular, respiratory, renal, gastrointestinal, musculoskeletal disorders, impaired immune system function and a reported increased risk of mortality to name a few.<sup>2</sup>

Health Canada acknowledges the health consequences of stress and considers it to be a risk factor in a great many diseases, such as heart disease, some types of bowel disease, herpes, mental illness and difficulty for diabetics to control blood sugar. It states severe stress can cause biochemical changes in the body, affecting the immune system, which leaves the body vulnerable to disease.<sup>3</sup>

Despite the acknowledgement that wind turbine noise may cause annoyance, stress and sleep disturbance the A/CanWEA Panel Review fails to offer any science based guidelines that would mitigate these health risks.

On the contrary the A/CanWEA Panel Review concludes by suggesting that the authoritative health based noise guidelines of the World Health Organization should be ignored and that wind turbine noise limits be based on public policy.<sup>4</sup>

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<sup>1</sup> World Health Organization, Guidelines for Community Noise, 1999  
[http://www.euro.who.int/mediacentre/PR/2009/20091008\\_1](http://www.euro.who.int/mediacentre/PR/2009/20091008_1)

<sup>2</sup> Night Noise Guidelines for Europe, World Health Organization (2009)  
[www.euro.who.int/document/e92845.pdf](http://www.euro.who.int/document/e92845.pdf)

<sup>3</sup> Health Canada <http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/life-vic/stress-eng.php>  
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The A/CanWEA Panel Review concludes by stating that it does not “advocate for funding further studies.”<sup>5</sup>

Others do not agree.

In November 2009 the Japanese Ministry of Environment announced a four year study into the effects of wind farms on health.<sup>6</sup>

In September 2009 members of the Maine Medical Association passed a resolution which among other things calls for independent study and authoritative guidelines.<sup>7</sup>

Preliminary findings of a controlled study (Mars Hill, Maine) being conducted by Dr. Michael Nissenbaum to investigate potential negative health effects concludes that adults living within 1100 meters of industrial wind turbines suffer high incidences of chronic sleep disturbances and headaches, among other somatic complaints, and high incidences of dysphoric psychiatric symptomatology, compared to a control group living 5000-6000 meters away. This controlled study is a work in progress.<sup>8</sup>

The A/CanWEA Panel Review can only be viewed for what it is. It is an industry association convened and sponsored attempt to deny the adverse health effects being reported.

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<sup>4</sup> W. David Colby, M.D. et al., Wind Turbine Sound and Health Effects, An Expert Panel Review 2009, Prepared for American Wind Energy Association and Canadian Wind Energy Association

<sup>5</sup> W. David Colby, M.D. et al., Wind Turbine Sound and Health Effects, An Expert Panel Review 2009, Prepared for American Wind Energy Association and Canadian Wind Energy Association

<sup>6</sup> <http://www.yomiuri.co.jp/dy/national/20091129TDY02309.htm>

<sup>7</sup> Maine Medical Association Resolution re Wind Energy and Public Health September 2009

<sup>8</sup> [http://windvigilance.com/mars\\_hill.aspx](http://windvigilance.com/mars_hill.aspx)

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### **SUMMARY OF FINDINGS**

The A/CanWEA Panel Review:

- appears to value quantity over quality – it consists largely of filler material including 22 of 85 pages (26%) blank or title pages.
- is not a study: it is an incomplete literature review.
- was prepared for and sponsored by AWEA and CanWEA which raises questions about its objectivity.
- displays selective bias favouring the positions of AWEA and CanWEA in the presentation of the referenced material.
- displays selective bias favouring the positions of AWEA and CanWEA by omission of relevant references.
- displays a negative bias regarding references that do not favour the interest of the AWEA and CanWEA.
- misquotes references.
- contains incomplete risk assessments related to health.
- contains misleading statements.
- contains statements without appropriate supporting references.
- contains conclusions which are not supported by cited references.
- ignores the authoritative research and noise guidelines of the World Health Organization.
- contains pre-emptive stereotyping of those who have concerns about health risks associated with wind turbine facilities. Terms such as “detractors” and “opponents” are used. This pre-emptive stereotyping extends to concerned medical professionals who are calling for authoritative guidelines designed to protect human health. This pre-emptive stereotyping dismisses the claim that the panel is independent and unbiased.

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