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Wind Turbine Noise

The reliance on wind as a source of energy is increasing in Canada and around the world. Some residents in communities that host large-scale turbine electricity generators have reported adverse health effects which they attribute to the sound emitted by operating wind turbines.

Health Canada provides advice on the potential health impacts of environmental noise, including that from wind turbines, which is protective of health. This advice is based on research, reviews of the scientific literature, World Health Organization guidelines, international standards, and knowledge gained from environmental assessments.

Wind Turbine Noise and Health Study

Health Canada, in collaboration with Statistics Canada and other external experts launched a multi-year research study in July 2012 to explore the relationship between exposure to sound levels produced from wind turbines and the extent of health effects reported by, and objectively measured in, those living near wind turbines.

The research design for the study was posted for a 60-day comment period to allow for public review and input. Feedback obtained through the consultation, as well as the responses provided by Health Canada officials,

was compiled and posted on the Department's website in alignment with transparent business practices.

Health Canada has released a summary of the results of the study. Results should only be considered final following peer review and publication in the scientific literature. The results of this study contribute to the body of peer-reviewed scientific research on wind turbine noise, but do not provide definitive answers on their own.

Wind Turbine Noise and Health Study Results

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Wind Turbine Noise and Health Study Consultation

- [Notice to Stakeholders - Health Canada Wind Turbine Noise and Health Study](#)
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Wind Turbine Noise and Health Study Methodology

- [Health Impacts and Exposure to Sound From Wind Turbines: Updated Research Design and Sound Exposure Assessment](#)
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Wind Turbine Noise and Health Study Expert Committee

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What is the Wind Turbine Noise and Health Study?

[\(PDF Version - 611 K\)](#)

Health Canada, in partnership with Statistics Canada, has conducted a study involving communities in Southern Ontario and Prince Edward Island to better understand the impacts of wind turbine noise on health and well-being. A total of 1238 households participated, out of a possible 1570.

The study had three parts:

- An in-person questionnaire, which was given to randomly selected participants living at various distances from the wind turbines;
- A collection of physical health measures that assessed stress levels using hair cortisol, blood pressure and resting heart rate, as well as measures of sleep quality; and
- More than 4000 hours of wind turbine noise measurements conducted by Health Canada to support calculations of wind turbine noise levels at all homes in the study.

The **Wind Turbine Noise and Health Study** is a landmark study and the most comprehensive of its kind. Both the methodology used and the results are significant contributions to the global

knowledge base and examples of innovative, leading edge research.

Key Finding FINDINGS

IT IS IMPORTANT to note that the results from this study do not provide definitive answers on their own and should be considered along with the other research available on the impacts of wind turbine noise on health. Results may also not be applied to other communities as the wind turbine locations in this study were not randomly selected from all possible sites operating in Canada.

Illness and chronic disease

- No evidence was found to support a link between exposure to wind turbine noise and any of the self-reported illnesses (such as dizziness, tinnitus, migraines) and chronic conditions (such as heart disease, high blood pressure, diabetes).

Stress

- No association was found between the multiple measures of stress (such as hair cortisol, blood pressure, heart rate, self-reported stress) and exposure to wind turbine noise.

Sleep

- The results of this study do not support an association between wind turbine noise and self-reported or measured sleep quality.
- While some people reported some of the health conditions above, their existence was not found to change in relation to exposure to wind turbine noise.

Annoyance and quality of life

- An association was found between increasing levels of wind turbine noise and individuals reporting to be very or extremely annoyed.
- No association was found with any significant changes in reported quality of life, or with overall quality of life and satisfaction with health. This was assessed using the abbreviated version of the World Health Organization's Quality of Life Scale.

Noise

- Calculated noise levels were found to be below levels that would be expected to directly affect health (World Health Organization-Community Noise Guidelines [1999]). This finding is consistent with self-reported and measured results of the study.

How will the Information be Used?

Health Canada will consider the results of this study, along with other scientific research available, when providing advice on the health impacts of wind turbine noise.

These findings will also support decision-makers, such as provincial and territorial governments, in the development of decisions, advice and policies related to wind power development proposals, installations and operations.

These results are considered preliminary until published in the peer-reviewed scientific literature.

For more information

A more detailed Summary of Findings from the Wind Turbine Noise and Health Study has been published on the Health Canada website at www.hc-sc.gc.ca. For more information, please contact: ccrpb-pcrpcc@hc-sc.gc.ca.

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Wind sickness doctor fronts Senate inquiry

environment reporter Sarah Clarke

PM Wind Energy

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Dr Pierpont says wind farm illness has been documented, and Australia should take note. (*Robert Cianflone: Getty Images*)

A doctor who pioneered a controversial study into what she calls "wind turbine syndrome" has told a Senate inquiry that residents living near wind farms will get sick.

Dr Nina Pierpont told the first day of the inquiry into the social and economic impacts of wind farms that illnesses have been documented, and Australia should take note.

The American paediatrician says she has clinical evidence that low frequency noise and infrasound from turbines disturbs the body's organs.

But the industry has been quick to question Dr Pierpont's findings, and the Federal Government's health advisory body says there is no such conclusion.

"Wind turbine syndrome is a uniform collection of signs and symptoms experienced by a significant proportion of people living near large wind turbines," Dr Pierpont said.

"The symptoms include sleeplessness, headaches, nausea, dizziness, tinnitus, ear pressure and pain, eye pressure and pain.

"Episodes of alarm and panic awakening people from sleep, with physical symptoms of an adrenalin surge like a pounding heart.

"Frequent night time urination and enuresis and problems with cognition and performance, including difficulty reading, loss of short-term memory and concentration and deficits in spatial memory and problem solving."

The study in which these symptoms were identified was based on 10 families in the United States who lived near a large wind farm.

Dr Pierpont interviewed them before, during and after the wind farm's construction, and she says that was enough to convince her that she had a case.

Family First Senator Steve Fielding instigated the Senate inquiry, and today he questioned the so-called "syndrome".

"I will ask a provocative statement to start with; if wind turbine syndrome is real, why is that there are people living near wind farms who are not affected at all?" he asked.

Dr Pierpont responded: "Because there's variability and susceptibility to the probable cause, which is the low frequency noise and infrasound, and that in fact was the focus of my study.

"These people came and went away at frequent times until they had figured out themselves that it was the turbines causing their problems."

Controversial findings

But the controversy surrounding Dr Pierpont's work centres on the fact that her research is non-peer reviewed and her claims were made in a self-published book.

That has been noted by the CSIRO, and it was on those grounds that the organisation's spokeswoman, Peta Ashworth, was hesitant to weigh into the anti-wind campaigner's case.

"We did a search and we did a review of the ISI Thompson [scientific database] under N. Pierpont, but nothing came up in the academic literature for 'wind turbine syndrome'," she said.

The National Health and Medical Research Council, which guides the Federal Government, also has advice on the matter.

While it acknowledges that studies into the potential adverse health effects need to be ongoing, it says there is no evidence as yet that the low frequency noise or shadow flicker from the wind turbines make people sick.

Russell Marsh from the Clean Energy Council says wind turbines are one of the safest ways of generating electricity.

"Wind turbines have been around for 30 years; we have got more than 100,000 operating around the world," he said.

"They've been tested, re-tested, by far one of the cleanest, safest, quietest ways of generating electricity and after all this time and testing by genuine experts there's no evidence that wind turbines make people sick."

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