

**Open Submission: Industrial Wind Turbines
can Harm Humans**

Health and Social-economic impacts in Ontario

Health Canada Wind Turbine Noise and Health Study

*Health Impacts and Exposure to Wind Turbine Noise:
Research Design and Noise Exposure Assessment*

Submitted by Carmen Krogh, BScPharm

December 8, 2012

Author's Note: This submission is being made on request and on behalf of the four members of the Michaud family from Ontario. Documentation regarding this submission has been verified by the family.

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Health Canada Wind Turbine Noise and Health Study

*Health Impacts and Exposure to Wind Turbine Noise: Research
Design and Noise Exposure Assessment*

Submitted by Carmen Krogh, BScPharm

December 8, 2012

To:

The Honourable Leona Aglukkaq
Minister of Health
Health Canada
minister_ministre@hc-sc.gc.ca

Copy:

The Right Honourable Stephen Harper
Prime Minister of Canada
pm@pm.gc.ca

David S. Michaud, PhD
Principal Investigator
david.michaud@hc-sc.gc.ca

December 8, 2012

Dear Minister Aglukkaq,

Re: Health Canada Wind Turbine Noise and Health Study

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1 Background

This submission is being made on behalf of the four members of the Michaud family from Ontario.

This submission relates to a project which has been operational since the spring of 2011.

2 Purpose

The purpose of this submission is to inform Health Canada, the study team and others about the health and socio-economic issues which have caused serious harm and disruption to quality of life.

I have provided a copy of my comments to The Right Honourable Stephen Harper, Prime Minister of Canada, Dr. David Michaud, Principle Investigator, Health Canada.

This submission is intended to contribute to study design for the *Health Canada Wind Turbine Noise and Health Study* and to request an inquiry-investigation prior to finalizing the study design and to request that emergency funding be provided to relocate the Michaud family and their livestock to restore their physical, mental, social well-being and livelihood.

Based on the elements of the Auditor General's Report, 2012, there may be an opportunity to obtain funding to take remedial action¹ regarding affected sites.

3 Disclaimer

The contents of this submission should not be used to infer any bias for or against wind energy.

This submission is not to be associated with and/or used to characterize any individual and/or organization.

I have received no financial support for the research, authorship, and/or publication of this submission.

4 Introduction

As some Health Canada representatives are aware, I am frequently in contact with those reporting the serious health and social-economic consequences that are occurring with the start-up of an industrial wind facility in a quiet rural area and in close proximity to residents.

I have made a number of submissions, both public and confidential, on behalf of Canadian families who are either reporting health and social-economic impacts associated with operating wind energy facilities, or who report similar concerns related to proposed projects.

This information is being provided at the request of the four members of the Michaud family, Chatham Kent, Ontario.

The harm reported is in conflict with the World Health Organisation's definition of health:

"Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" ²

Many jurisdictions, including the Canadian federal, provincial, and territorial governments and health officials have accepted WHO's definition of health (Health Canada, 2004, vol. 1, p. 1-1)." ³

5 Particulars

The family reports: ⁴

5.1 September 4, 2011

"Six years ago we moved our family from the city, thought maybe it would be nice to live closer to nature, maybe grow our own fresh food, live off the land.

It was beautiful, the night sky, the wildlife. We worked hard, built a home and a hobby farm.

Then one day we found a letter in the mailbox that read "Occupant", it was a notice about the Wind farm proposal.

Little did we know it was the last of many planning meetings discussing this event. We attended but realized that these things were coming no matter what we had to say!

Two years later here we are.

All four members of our family are each experiencing devastating adverse affects! Illnesses that do harm our lifestyle, affects that take away our enjoyment of life, and interfere with our work, affects that are impacting how we live day to day and how we interact with others around us.

Our peaceful country home is no more!

We did not know anything about this wind syndrome until we all started getting sick and only now have I been becoming educated in this phenomenon.

In reading all the controversy on this subject sickens me, how can a Doctor who's oath is "do no harm" stand there and say there is no harm here?

I do not understand anyone can bush off someone's suffering so easily!

We did not ask to have these Wind Turbines placed in our back yard, nor did we ask for the illnesses you call an "Annoyance".

I believe that the symptoms that my family and I have been living with the past 5 months are real and in fact life threatening, not only to our selves but to others. If one of us suffers a bout of Vertigo while operating a motor vehicle, that results in an accident then it becomes pretty dam adverse, especially if we injure or kill someone!

If we go to our place of employment after too many sleepless nights, and make a mistake or get injured that may result in our job loss or again loss of life that seems pretty adverse as well!

It is a sad state we live in when we cannot trust those hired and elected to protect the little people!

Sick of being sick on the Dew Drop we call home!"

5.2 September 14, 2011

"Thank you for sticking by us... we really need to raise public awareness... we were all so affected the day they filmed that piece... with the nausea and vertigo... the past two weeks our health has declined to a constant state of unbalanced fatigue, vertigo, nausea, disorientation, unusual stomach cramps... medicated by SERC

my daughter is so tired and feels unwell but still works up 6 days a week, she's a real trooper...

my husband and son have had to leave work early a number of times in the last two weeks...

my son is so upset that his health has declined so much and he has no balance it has affected his work ability and his musical talent is suffering...

his greatest fear is that his hearing will be affected and he will no longer be able to play or write music... it might take 6 months for him to see an audiologist and vertigo specialist.

I never thought I would hear from either of them that they are considering moving if they don't start feeling better soon... they both have worked so hard here and love this place so much.

its just not fair to be run off our home & land... Canada is better than this, or so I thought.

Oh and today I got a nose bleed.... I hope I don't get more.

oh and I think one of my goats had a false pregnancy... she looked pregnant and acted so then nothing, no baby... it's so weird.

We hope to remain strong but I can see now why some people leave their homes and hopes and dreams behind them and why some turn to suicide... it eats at your soul!

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ps the wind is so strong today and the turbine behind me has been so loud I called the MOE twice in 12 hours...

I have been sitting in my beautiful sunroom for about 20 minutes and I feel like throwing up...

this was my favorite room in the house... my happy place but it slowly becoming a storage area that I have to retreat from that retreat too!"

5.3 June 27, 2012

"we are unsure what to do...

I have spoken to people who are in direct path of these monsters... they are suffering but wish to remain out of the battle... for various reasons... part of me gets it but part of me doesn't...

we know we need to continue to take a stand, but at the same time unless there is a show in numbers then is it really worth the violence that could ensue? but then again this area is soon to be overwhelmed with the numbers of turbines coming... its sickening and maddening and disheartening...

what can we do?

I'm sure there will be another ERT set up for this area, but will anything come of it? so many around her are beaten down and losing hope and that's exactly what the MOE, the Government and the Wind Industry are waiting for!

I have heard that "The head-hunters" have been out in force in our area attempting to sign up more leaseholders... soon there will be no where for any of us to live!

THIS IS SO WRONG!!!

WE ARE ALL BEING ABUSED IN OUR OWN HOMES... HOW LONG ARE WE GOING TO BE EXPECTED TO JUST SIT HERE AND TAKE IT?

I WONDER IF THE MAYOR WILL BE IN ATTENDANCE? I THINK WE SHOULD GET TOGETHER AND LAY A LAWSUIT ON HIS DOORSTEP!

HE TOLD ME TO MY FACE THAT HE WAS THE ONE RESPONSIBLE FOR APPROVING THE PROJECT IN MY BACKYARD AND LIKELY MANY OF YOURS!

WHAT ELSE CAN WE DO?

ALL OF YOU HAVE BEEN FIGHTING THIS SO MUCH LONGER THAN MYSELF... I DON'T KNOW HOW YOU DO IT... AND I CAN UNDERSTAND YOUR FATIGUE!!! YOU ARE ALL PIONEER WARRIORS!

THANK YOU!

Let me know who is attending this evening... and we will go and stand along side you!"

5.4 September 25, 2012

"Dear [sent to Ombudsman]

I received your letter today on our file # [*deleted for privacy*].

I beg you to reconsider your decision that an investigation is not warranted... if one life is at stake then it should be warranted...

My family is not the only one who is suffering the effects of the Industrial Wind Turbines.

This is more than province wide it will continue to harm a number of Canadians if it is continued to be left unchecked.

I truly believe that more needs to be done before hundreds more of these facilities are haphazardly scattered across our province.

I am a Disabled Canadian with rights and freedoms that can not continue to be ignored.

If I can not live peacefully and safely in the comfort of my home then where am I to go?

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It is my understanding that as a Disabled person the government is supposed to protect my rights and I need to know how they plan to do this.

The Chief medical officer's report is flawed and used flawed information to come to its conclusion.

There are many factors at play here that are being dismissed with regards to the adverse health effects of the turbine farms.

The set backs need to be reconsidered.

If I cannot count on your office to help me and for the government sworn to protect me then please tell me where I am to turn to?

My family and I need your help!

please reconsider and investigate this issue to the fullest extent of the law!

What type of cases do your limited resources feel important enough to be spent on? I truly believe that this crisis will in time shorten my life if it is not addressed soon!

I feel that the Industrial Wind Turbines are placing a Barrier on my right to a healthy lifestyle, as/per The Ontarians with Disabilities Act below.

These turbines are causing an unnecessary hardship on me and my family...

I am not able to fully function as a healthy person and I am not able to care for myself and my family the same way I did before they were installed in my neighborhood.

I beg you something must be done!

Thank you for hearing my plea

The Ontarians with Disabilities Act is the short title of the Ontario Government's Bill 125 - "An Act to improve the identification, removal and prevention of barriers faced by persons with disabilities and to make related amendments to other Acts". The Act

received Royal Assent on 14 December 2001 and came into force on February 7, 2002. A new piece of legislation was enacted to address accessibility issues, the Accessibility for Ontarians with Disabilities Act, 2005 in 2005. The Ontarians with Disabilities Act remains in force.

The Bill's original purpose had been to achieve a barrier-free Ontario for persons with disabilities -- a right of full participation. It was to require the timely removal of existing new barriers, within reasonable time lines and in accordance with reasonable cost parameters. It was meant to apply to employment, public transit, education, provincial and municipal government services and facilities, and other goods, services and facilities offered to the public.

Those who supported the idea of an ODA hoped that it would require government bodies, and others bound by law to identify the barriers that they now have which impede persons with disabilities from full participation, and to design reasonable plans consistent with their resources to remove these barriers and to prevent new ones from being created, all within reasonable time lines. They wanted it to allow for the enactment of regulations with input from disability groups, business interests and others, to set out measures to be implemented to achieve the ODA's goals, and reasonable time lines for their achievement. It was meant to incorporate an effective, fair and timely process for enforcement.

However, Bill 125 became a weak act [by whom?] that suggested voluntary action without enforcement, penalties or deadlines. Critics of the Bill (e.g. the Ontarians with Disabilities Act Committee) have petitioned the government to revisit the Act and pass a stronger, more effective Act, which they did in 2005 with the enactment of the Accessibility for Ontarians with Disabilities Act, 2005 (AODA).

Excerpts of the letter to the Ontario Ombudsman:

"I live near 8 Wind Turbines from the Kent Breeze Wind Farm situated behind our home.

All four members of our household have been battling severe adverse Health affects since May 2011 when the wind went online.

We are presently suing Suncor and the Kent Breeze in Ontario Superior Court for the sum of 1.5 Million dollars.

We feel that the government needs to investigate and allot greater set backs so that other Canadians do not suffer as we are now.

As residents of Ontario, we demand a full Public Inquiry into the wind turbine policy being aggressively executed by the McGuinty government.

Among other things the Ombudsman's office has ample evidence of process gaps, lack of control, inattention and lack of response to public consultation, denying public input at the Green Energy Act Standing Committee Hearings, ministry staff admissions of inability to enforce Certificates of Approval, inability to regulate the wind farm operators, misleading information being given to residents who are suffering and suppression of information shown in documents from their own field officers warning and calling for action on the part of their superiors to correct the flaws.

Families who are suffering, with some being forced from their homes, are subjected to the Premier and Ministers repeated public claims there are no health issues in wind turbine installations and rely only on Dr. Arlene King's report of May 2010 claiming such.

Dr. King did a literature review. Her conclusion does not match the body of the review. Dr. King did not speak with any of the families who have been pleading for the government to respond. Good doctors listen to people and investigate the claims, they don't ignore overwhelming evidence.

Peer reviewed evidence of the health concerns have been delivered to the ministries and they are ignoring it.

The residents of Ontario are entering an election that isn't based on transparency.

The general public does not know of the evidence that the Ombudsman's office has collected and cannot make a clear choice on Election Day with this information being suppressed.

WE DEMAND AN INVESTIGATION BE INITIATED BEFORE WE MAKE OUR CHOICE AT THE POLLS.

WE DEMAND A PUBLIC INQUIRY INTO THE WIND TURBINE POLICY BEING RECKLESSLY ENFORCED BY OUR PROVINCIAL GOVERNMENT."

5.5 November 11, 2012

"I have made many calls to the moe and spills line... and i had sent an email a while back to one of the mpp's who then sent it to the moe and they contacted me... then [deleted for privacy] contacted me... i asked about freedom of info act to get a record of my calls and he said he would get it all for me instead...

but the other day he was having a meeting with his boss to figure out how to handle it all... also he called to get my permission to come on our property to measure... at the time i agreed but only if they called me first because e i told them we had 4 dogs and i need to know before they com on our property....

he said he had 5 others to measure in our local...

after talking to [deleted for privacy], he suggested that i get something in writing from moe stating that they would give me a copy of their findings within 30 days or something...

so i called today and left a message with regards to that... i didn't hear back so i might call again tomorrow about it...

I'm going to call tonight again because i can hear the turbines in the house... again... oh and after being away for two days... on wed am it only took about 20 minutes of sitting in my room here by the window to start getting sick...

good thing i had to go away for the day... bad thing was that i had to drive to Windsor past all the IWT's to take my son to see the Neurologist who spent about 5 minutes looking at him and shaking him and making him touch his nose and stuff to come to the conclusion that there was nothing wrong with his brain... no scans or nothing... what a waste of time...

i wish someone would pay me to do so little!

doctors!!! no comment!"

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5.6 December 6th 2012

"We are still experiencing severe adverse health affects.

The noise, illnesses and the stress are more than we can bare!

We have no where to go to get away from it all and don't want to walk away in an attempt to start over!

My doctor continues to refuse me treatment or investigation with regards to my wind turbine syndrome as she feels that I might us the results in my lawsuit. She feels that if my lawyer wants info then he will need to request it and pay for it! So I go untreated by my health care provider!

I am in deep disparity and am loosing the battle of hope!

I am begging that someone look at and correct this problem by putting a moratorium in place to protect Canadian families from this atrocity!"

6 Role of New Experts

This submission supports the importance for consulting with those reporting negative health and social-economic issues associated with the start-up of operations of wind energy facilities.

The Krogh-Harrington October 31, 2012 submission to Health Canada discusses the role of New Experts: ⁵

"Soundscaping, an acoustic discipline is scientifically established and is becoming standardized under ISO 12913 through the work of ISO TC43/SC1/WG54. Of interest is that the science of Soundscaping development stems from work initiated in the 1960s and subsequently acknowledged in 1977 by the Canadian researcher, musician, and environmentalist, professor Raymond Murray Schafer from Simon Fraser University, British Columbia. ⁶

Soundscaping combines physical and psycho- acoustical measurements with scientific evaluation of perceptual responses to environmental noise. ⁷ An ISO

working group proposes to define Soundscaping as “perception of the acoustic environment as perceived by people in that place, in context”.⁸

The concept of Soundscaping, has gained recognition.^{9, 10, 11, 12, 13} It is considered to be different from noise control engineering.¹⁴ Soundscaping considers the people living in the environment as local experts,¹⁵ an essential component of the evaluation,¹⁶ and that perception of the soundscape “ can provide comfort, tranquility, and needed information to the person concerned or may be a source of annoyance.”¹⁷

With respect to very low frequency noise which may not be audible, humans are being considered as “objective measuring instruments (New Experts), whose reports and descriptions must be taken seriously and quantified by technical measurements.”¹⁸

In a recent conference paper, presented to the Acoustical Society of America regarding very low frequency noise measurement, Bray (2012) states:

“A central tenet of the Soundscape concept is that humans immersed in sonic environments are objective measuring instruments (New Experts), whose reports and descriptions must be taken seriously and quantified by technical measurements.

The Soundscape concept centering on human responses, New Experts, is as important and applicable to responses to effects from sound as it is to responses to directly audible sound. In a wider sense, this is a new sound quality and psychoacoustic issue.”¹⁹

Bray (2012) elaborates:

“Soundscaping integrates two relationships of sound and people: that people are the ultimate analysts or data sources about their responses to sound because it is they who are immersed in it or make it, and that sounds (receptions by people) are always part of human contexts; panoramas involving other senses, the environments in which people live or work, and the people’s cognitive as well as sensory circumstances.

Sounds must be “taken out from under the microphone” where they have

historically been studied in isolation, and put into the “big and anthropocentric sound field” – the soundscape.

At present a growing number of people are reporting sleep deprivation, unease and even illness which they most often ascribe to low frequency sound either near the hearing threshold or, more frequently, sub audible. Such reports are most frequent in rural or quiet suburban areas following the installation of large wind turbines, a new sound source without historic acoustic reference. ” ²⁰

Ambrose et al (2012) state:

“The best acoustic analyzer for determining human response is the human listening. This research shows it is not appropriate to use unattended sound measurement instruments.” ²¹

Krogh et al reports on human perception to noise:

“Reviewed literature, case reports, freedom of information documents and expert testimony are presented which support the conclusion sound that is perceived and considered “unwanted” can result in serious negative effects.

Perception can be defined as: “... awareness of one’s environment through physical sensation...”. Human perception of sound can result in a number of responses which can be positive (music), negative (noise) or neutral. Presence of sound does not necessarily signify the presence of noise. “Physically, there is no distinction between sound and noise. Sound is a sensory perception and the complex pattern of sound waves is labeled noise, music, speech etc. Noise is thus defined as unwanted sound.” Sound meters can assess sound; however, humans assess “noise”. Sound becomes a risk to human health when it is considered to be noise.” ²²

7 Closing statements ²³

Recently, the release of an Ontario Freedom of Information request reveals that the Ministry of Environment abatement officer considered the negative effects in another project merited an abatement order. This information has been forwarded to the attention of those on the contact list noted on this submission (the Honourable Minister of Health,

Health Canada, with copies to the Prime Minister and the Principle Investigator, Dr. Michaud Health Canada study on wind turbines).²⁴

The lack of Canada-wind Wind Vigilance monitoring and long term surveillance systems has been noted in previous submissions made to Health Canada.

Research indicates New Experts i.e. humans, "are objective measuring instruments...". To date, the voices of those adversely affected by operating and proposed wind turbine facilities in rural Canada have not been heard. An inquiry to investigate wind turbines and the health and social-economic issues would provide the opportunity to obtain first hand knowledge from the "New Experts" who are currently exposed; who have been exposed in the past; or will be exposed in the future; to wind energy facilities.

This submission on behalf of the four members of the Michaud family is an example of the urgent requirement to consult with the New Experts prior to finalizing the Health Canada study design. The frustration and expressions of helplessness and lack of resolution is evident from their reports documented in this submission.

As the result of the anticipated proliferation in the future²⁵ of industrial wind turbine facilities in Canada, it is expected more Canadians will be at risk of harm.

This submission and those made on behalf of other families that were provided in confidence to Health Canada are examples of an urgent requirement to convene an inquiry-investigation and to assist resolving the issues reported to Health Canada.

Other jurisdictions have conducted a public inquiry-investigation to better understand the health and socio-economic impact of wind energy development.^{26 27 28 29 30}

In addition to the advantages of a public inquiry-investigation described in the Krogh and Harrington submissions of September 5, 2012 and October 31, 2012, "New Expert" testimony would provide expert advice regarding health, social well-being and social-economic impacts and would assist with the study design.

Indications are that more than 12 wind energy projects in Ontario are supported with ecoENERGY contracts from NRCan. Indications are EcoENERGY funding has been provided in other provinces. The lack of disclosure by Health Canada of this information is of concern.

The Report of the Commissioner of the Environment and Sustainable Development to the House of Commons 2012 states that regarding federally funded initiatives:

“Some of the thousands of contaminated sites are a testament to poor planning, the failure of initial assessments to anticipate and avoid future environmental and human health problems, and a lack of ongoing mitigation to lower the environmental risks during operations.”³¹

Action by Health Canada would support its “Mission and Vision”:

“Health Canada is the federal department responsible for helping the people of Canada maintain and improve their health.

Health Canada is committed to improving the lives of all of Canada's people and to making this country's population among the healthiest in the world as measured by longevity, lifestyle and effective use of the public health care system.”³²

And Health Canada's “Objectives”:

“By working with others in a manner that fosters the trust of Canadians, Health Canada strives to:

- Prevent and reduce risks to individual health and the overall environment;
- Promote healthier lifestyles;
- Ensure high quality health services that are efficient and accessible;
- Integrate renewal of the health care system with longer term plans in the areas of prevention, health promotion and protection;
- Reduce health inequalities in Canadian society; and
- Provide health information to help Canadians make informed decisions.”³³

Others with similar concerns may not have identified themselves to Health Canada. However, I am aware of other Canadian families reporting similar issues.

Based on the elements of the Auditor General's Report, 2012, there may be an opportunity to obtain funding to take remedial action³⁴ associated with affected sites.

Until guidelines are established that protect human health and social-economic viability, no further development of wind energy facilities should occur and existing sites reporting health issues should be resolved to the satisfaction of the New Experts.

Resolution would include pausing before constructing wind energy facilities until siting guidelines are protective of human health to ensure physical, mental and social well being.

I would appreciate any assistance that Health Canada could offer to many of those reporting health effects associated with the start up of operations of industrial wind energy facilities.

In the meantime, on behalf of the Michaud family, I am requesting that emergency funding be provided to relocate them and their livestock to restore their physical, mental and social well-being until resolution has been achieved to their satisfaction.

Respectfully submitted on behalf of the four members of the Michaud family from Ontario,

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¹ 2012 Spring Report of the Commissioner of the Environment and Sustainable Development
http://www.oagbvg.gc.ca/internet/English/parl_cesd_201205_03_e_36775.html#ex5

² World Health Organization. (1948). Preamble to the constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948. Cited Krogh, CME, (2011), Industrial Wind Turbine Development and Loss of Social Justice? Bulletin of Science Technology & Society 2011 31: 321, DOI: 10.1177/0270467611412550, <http://bst.sagepub.com/content/31/4/321>

³ World Health Organization. (1948). Preamble to the constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948. Cited Krogh, CME, (2011), Industrial Wind Turbine Development and Loss of Social Justice? Bulletin of Science Technology & Society 2011 31: 321, DOI: 10.1177/0270467611412550, <http://bst.sagepub.com/content/31/4/321>

⁴ Excerpts from personal logs and communications with the Michaud family

⁵ Open Submission, Update: Proposal for an Inquiry-Investigation into the Health including Socio-Economic Impacts of Industrial Wind Turbines in Rural Canada, Health Canada Wind Turbine Noise and Health Study Health Impacts and Exposure to Wind Turbine Noise: Research Design and Noise Exposure Assessment, October 31, 2012, Submitted by Carmen Krogh, BScPharm and Beth Harrington, BMus

⁶ The World Soundscape Project (WSP), <http://www.sfu.ca/~truax/wsp.html>

⁷ Schulte-Fortkamp, Brigitte, Vehicle exterior noise from the view point of new experts. The Journal of the Acoustical Society of America. 06/2008; 123(5):3134.

⁸ Weber, Miriam, Quiet Urban Areas: repositioning local noise policy approaches – questioning visitors on soundscape and environmental quality. DCMR Environmental Protection Agency, the Netherlands

⁹ Call for Papers on Soundscape in Journal of the Acoustical Society of America (JASA) | The World Listening Project. Cited 29/10/2012

<http://www.worldlisteningproject.org/cal-lfor-papers-on-soundscape-in-journal-of-the-acoustical-society-of-america-jasa/>

¹⁰ Hot topics in soundscapes, COST action TD0804: “Soundscape of European Cities and Landscapes” workshop, Edinburgh UK, Novotel, 80 Lauriston Place, Thursday 29th – Friday 30th 2009, <http://www.cost.est.org>

¹¹ Bert De Coensel, Annelies Bockstael, Luc Dekoninck, Dick Botteldooren, Brigitte Schulte-Fortkamp, Jian Kang, Mats E. Nilsson, The Soundscape Approach for Early Stage Urban Planning: A Case Study, InterNoise 2012, Lisbon, Portugal (Invited Paper)

¹² Soundscape. An environment of sound (or sonic environment) with emphasis on the way it is perceived and understood by the individual, or by a society. Truax, B. (1999). Handbook for Acoustic Ecology (2ndEd.). Cambridge Street Publishing

¹³ Axelsson, Östen, Introducing soundscape, AESOP, 2012, 26th Annual Congress, July 11-15, Ankara, Turkey

¹⁴ Brigitte Schulte-Fortkamp, Jian Kang, Soundscape research in networking across countries: COST Action, The Journal of the Acoustical Society of America. 03/2010; 127(3):1801.

¹⁵ B. Schulte-Fortkamp, “The tuning of noise pollution with respect of the expertise of people’s mind”, proceedings InterNoise, (2010) Lisbon Portugal, 13-13 June 2010

¹⁶ Brigitte Schulte-Fortkamp, Bennett Brooks, Interventions through the soundscape approach. The Journal of the Acoustical Society of America. 10/2010; 128(4):2370.

¹⁷ Brigitte Schulte-Fortkamp, Bennett Brooks, Better soundscapes for all workshops on continuing development of soundscape techniques standardization: Workshop introduction. The Journal of the Acoustical Society of America. 11/2008; 124(4):2552.

¹⁸ Bray Wade, Acoustical Society of America 164th Meeting, Kansas City, MO 22 – 26 October, 2012, 2aNS6, Relevance and applicability of the Soundscape concept to physiological or behavioural effects caused by noise at very low frequencies which may not be audible. www.acoustics.org/press/164th/Bray_2aNS6.html

¹⁹ Bray Wade, Acoustical Society of America 164th Meeting, Kansas City, MO 22 – 26 October, 2012, 2aNS6, Relevance and applicability of the Soundscape concept to physiological or behavioural effects caused by noise at very low frequencies which may not be audible. www.acoustics.org/press/164th/Bray_2aNS6.html

²⁰ Bray Wade, Acoustical Society of America 164th Meeting, Kansas City, MO 22 – 26 October, 2012, 2aNS6, Relevance and applicability of the Soundscape concept to physiological or behavioural effects caused by noise at very low frequencies which may not be audible. www.acoustics.org/press/164th/Bray_2aNS6.html

²¹ Ambrose Stephen E., Rand Robert W., Krogh Carmen M. E., Falmouth, Massachusetts wind turbine infrasound and low frequency noise measurements Invited paper presented at Inter-noise 2012 New York City, NY

²² Krogh Carmen ME, Jeffery Roy D, Aramini Jeff, Horner Brett, Wind turbine noise perception, pathways and effects: a case study, InterNoise 2012, New York City, NY, August 19 -23

²³ Closing statements by Krogh

²⁴ Part IV Health Canada Submission Whitworth family December 8, 2012

²⁵ Science Advisory Board Meeting, Proceedings - Science Advisory Board (SAB), February 1-2, 2012

²⁶ New South Wales. Parliament. Legislative Council. General Purpose Standing Committee No. 5, Rural Wind Farms, 2009

²⁷ The social and economic impact of rural wind farms: Public hearing before the Senate Community Affairs References Committee, Commonwealth of Australia (2011, May 17).

Retrieved from http://www.aph.gov.au/senate/committee/clac_ctte/impact_rural_wind_farms/index.htm

²⁸ Falmouth Board of Health, Correspondence June 11, 2012, Falmouth, Massachusetts USA, Massachusetts Department of Public Health (MASS DPH)

²⁹ Renewable Energy (Electricity) Amendment (Excessive Noise from Wind Farms) Bill (2012), Australia, <https://senate.aph.gov.au/submissions/pages/index.aspx>

³⁰ Falmouth Board of Health, Correspondence June 11, 2012, Falmouth, Massachusetts USA, Massachusetts Department of Public Health (MASS DPH)

³¹ 2012 Spring Report of the Commissioner of the Environment and Sustainable Development
http://www.oagbvg.gc.ca/internet/English/parl_cesd_201205_03_e_36775.html#ex5

³² Health Canada, About Health Canada, About Mission, Values, Activities, Retrieved from <http://www.hc-sc.gc.ca/ahc-asc/activit/about-apropos/index-eng.php>, Cited August 24, 2012

³³ Health Canada, About Health Canada, About Mission, Values, Activities, Retrieved from <http://www.hc-sc.gc.ca/ahc-asc/activit/about-apropos/index-eng.php>, Cited August 24, 2012

³⁴ 2012 Spring Report of the Commissioner of the Environment and Sustainable Development
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