

**Open Submission: Industrial wind turbines can harm
children and youth**

Health Canada Wind Turbine Noise and Health Study

Submitted by Carmen Krogh, BScPharm

April 24, 2013

Author's Note: This submission is being made on request and on behalf of "Jack and Anna Hovius, on behalf of our daughter and family" from Ontario. Documentation regarding this submission has been verified by the family.

Open Submission: Industrial wind turbines can harm children and youth

Health Canada Wind Turbine Noise and Health Study

Submitted by Carmen Krogh, BScPharm

April 24, 2013

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

April 24, 2013

Dear Minister Aglukkaq,

Re: Health Canada Wind Turbine Noise and Health Study

1 Background

This submission supplements those previously made which have expressed concerns regarding risks to children and families associated with wind energy facilities.^{1 2 3 4 5 6 7}
This is not an exhaustive list of submissions forwarded to the Minister, Health Canada.

This submission is being made on behalf of Jack and Anna Hovius, their daughter and family, from Ontario.

2 Purpose

The purpose of this submission is to inform Health Canada about the health and socio-economic issues which have reported by Canadians of impairment of health including sleep disturbance, annoyance, mood disorders, such as stress, anxiety, depression, frustration, financial burdens, and social impacts within the community and other health related issues. In some cases, families have relocated to protect their health.

In view of the serious nature of the issues, I am requesting an investigation/inquiry into the health including socio-economic impacts of industrial wind turbines in rural Canada.

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.

3 Disclaimer

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

I have no potential conflicts of interest with respect to the research, authorship, and/or publication of this submission.

4 Introduction

Health Canada is aware there continue to be reports regarding health and social-economic issues associated with wind energy facilities.

It has been noted in previous submissions that the harm being 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”⁸

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)."⁹

5 Case report by the family

The Hovius family reports:

“Documentation of Immediate Effects Mapleton- Next Era Wind Turbine Location

February 18, 2013; 4:00 – 5:00 pm.

Weather conditions: Brisk easterly winds, North-south roads snow covered and drifted sections , Temperature -5C, Ground is snow covered, about 1 foot deep. The turbines were operating.

On February 18, 2013 from 4:00 – 5:00 pm I traveled with my wife and my daughter to the Mapleton Wind turbine site (Next Era) in Peel Township in order to assess the susceptibility of my daughter, a healthy and normal North Perth resident, aged 21, to the emissions of wind turbines. Science has yet to fully quantify the nature of these emissions that cause health problems but it is widely presumed to be low frequency sound / infrasound and it is known that larger turbines produce more of these emissions.

This North Perth resident has previously visited turbine sites in

- Carlow (Kingsbridge I, 22 Vestas turbines X 1.8 megawatts / turbine),
- Ripley (Sencor and Acoina, 38 Enercon turbines X 2.0 megawatts / turbine),
- Kincardine (Enbridge, 110 Vestas turbines X 1.65 megawatts / turbine), and
- Shelbourne (Melancthon I and II, 133 General Electric turbines X 1.5 megawatts / turbine).

Visits to these previous sites resulted in immediate headache, pressure in her ears and ringing in her ears after about a one hour exposure. The symptoms typically start 2 – 7 km away from the turbines depending on location and perhaps, size and density of turbines.

The Next Era project (north of Drayton) has 10 Siemens 2.3 megawatt turbines. Following is a documentation of observed effects.

- In the town of Drayton – subject resting in vehicle with eyes closed.

- Proceeding North from Drayton and cresting the hill by the cemetery, subject felt a sudden fluid movement in her sinuses from higher in her head to lower parts and felt pressure.
- She opened her eyes and observed turbines 5 – 6 km away.
- Pressure in ears and head gradually increased as we drove 3 km north in the direction of the turbines.
- Headache started by the time we were 3 km from the turbines.
- Driving past turbines about 1 km south and 1 km east on the upwind side resulted in increasing pressure and tightness around the forehead. There was increasing pressure in the ears like an earache. It felt like air pressure buildup on the inner side of the ear drum as is felt when ascending in an airplane. Headache is increasing.
- Hiking into center of project area to about within 400 m of nearest turbine caused the symptoms to increase in intensity. We spent about ½ hour walking near the turbines. There was the feeling of the pounding of the heartbeat behind the eyes (maybe blood pressure increasing?).
- We drove away and parked for 20 minutes about 1 km downwind from the nearest turbine.
- After about 1 hour of total exposure time from the time the headache started she asked to leave the area because her full blown headache was becoming unbearable.
- Then as we started driving away, she experienced a moderate volume, 2 second long, ring in her left ear, “like a clanging bell”, not a “tinkling, melodious bell”. The noise was described as coming from the inside of the head or the inner side of the ear drum, and definitely not a sound from the outside coming into the ear.
- By the time we drove the 6 km back to Drayton the pressure was gone but the headache remained.
- As we drove the headache decreased and disappeared by the time we had driven 19 km away from Drayton towards Listowel.
- The other occupants of the vehicle did not feel these immediate effects.

The estimated distance from nearest turbine, as the crow flies, when first symptoms appeared just north of Drayton:

- by measurement of a scale map – 5.4 km
- by odometer and trigonometric calculation – 5.8 km

The distances at which my daughter experiences these immediate effects eliminates audible noise as the source of the problem and suggests other possibilities such as infrasound/low frequency sound.

Her comments: “These 10 Siemens X 2.3 megawatt turbines did not seem as severe as the effect at the highway location we visited in the Enbridge project north of Kincardine where we counted 70 visible turbines at that specific location where we stopped”. (Enbridge has 110 Vestas turbines X 1.65 mega watts / turbine). Perhaps the deep snow conditions had some mitigating effect.

Even so the setback distance at which she could reasonably be expected to live is measured in kilometers, not meters. My daughter observed that during a stay in Oklahoma, turbines an unknown distance away (estimated 7 km) but far from the ranch where she stayed resulted in a constant dull but bearable headache the whole time she was there. She does not want to and should not be expected to live in that state when proposed 2.85 megawatt turbines are built less than 2 km from her family's home.

The proposed Invenergy project would place this presently healthy North Perth individual within 5 km of 12 – 2.85 megawatt turbines and within 7 km of 16 – 2.85 megawatt turbines.

This would, understandably, be an unacceptable violation of our family's home.

Jack and Anna Hovius, on behalf of our daughter and family.

5515, Line 84,

RR#4,

Listowel, Ontario.

N4W 3G9

519-291-4286

jahovius@porchlight.ca

6 Actions taken

The families report contact with federal and provincial authorities:

1. Letter to Dr. David Michaud, Principle Investigator, Health Canada Wind Turbine Noise study with copies to others

5515, Line 84

RR#4, Listowel, On

September 6, 2012

Mr. David S. Michaud, PhD

Principal Investigator

Consumer and Clinical Radiation Protection Bureau

Healthy Environments and Consumer Safety Branch

Health Canada

Dear Mr. Michaud:

RE: Health Canada's Wind Turbine Noise & Health Study

I would first of all like to express my approval of the Federal Government and Health Canada for their initiative in studying the health impacts of Industrial Wind Turbines. As a resident of a rural Ontario community where there is a proposed Industrial Wind Turbine installation, I would like to bring forward my concerns and my hope that there may be some clear and helpful Federal standards to address human health concerns.

The proposal to place turbines near our farm and in our community by a company called Invenergy is of great concern to my family. It has become evident in the last few months that my daughter is one of that part of the population that suffers immediate health effects when approaching and within a turbine area. Like any other illness from an environmental exposure, some people exhibit symptoms after a short exposure and some only after exposure of a year or more and some apparently have or notice no effects. However our daughter has the immediate effects of pressure in her ears, ringing in her ears and headache. The symptoms start about 2 km away from the turbines in the car as we approach the turbine area. The severity of symptoms increase with the duration of stay in the area and symptoms seem to disappear more slowly if she is exposed longer. A one half hour exposure results in symptoms severe enough to have her begging to leave the area.

Wind company spokesman say that these symptoms are the result of the anxiety that comes from the visual cue of wind turbines and the fear generated by the thought of being near them. In other words, it is her own fault for thinking about them and fearing them. This is clearly not the case since her first exposure was driving past wind turbines without any concerns about it, and after the fact, linking the symptoms she suddenly experienced with the location in which they started, that is near turbines. In the 2nd incident, we, the parents, drove her into a turbine area and she was totally unaware of our intentions. The turbines were not visible over the crest of the hill and she had no anticipation or knowledge that we were approaching turbines, and yet she complained of pressure and headache starting about 2 km before we crested the hill and saw the first turbine. Since then several test visits to turbine fields (but these times with her consent) have repeatedly confirmed the symptoms.

The sudden onset of symptoms may seem extreme to you but her grandmother experienced similar effects when close to Industrial Wind Turbines. Another family acquaintance also experiences discomfort when driving past wind turbines. Anecdotally, but not personally, I have heard of 4 others who experience immediate effects. I have not sought out such people but if I have encountered this level of problem in the limited number of people in my circles, there can be expected to be many more.

It would appear that if the turbines are placed close to our home as proposed (about 1.5 km away), it would no longer be possible for my daughter to continue living at home. We would be involuntarily exposed 24 hours a day and 7 days a week, as long as the

wind is blowing. It is totally unacceptable for such a burden to be placed on my family, and for such a violation of my personal property and home.

I understand that the Health Study is to be primarily focused on audible noise. Based on our family's experience of health effects, factors other than simply audible noise are indicated. The 2 km distance of effect and the background noise of automobile travel preclude audible noise as the issue. It suggests that Low Frequency sound or Infrasound or some other as yet unidentified factor(s) is an issue here. Dirty power, stray voltage and electrical hypersensitivity are other effects reported by residents in wind turbine areas. I am recommending that these other factors also be included within the parameters of your study.

In addition to concern about the health and well being of my own family and the other families in the community that I count as neighbours and friends, I have concerns about the placement of this project on prime agricultural land in the most livestock dense area of Ontario. Though the project looks small on Ontario's map, this area produces a significant part of Toronto's (and Ontario's) food out of all proportion to its small size with a heavy representation of dairy, hog, beef and poultry farms. If there are health impacts to people, we can fully expect impacts on other living things like our livestock. Livestock farming is crucial to this area's economy and any impacts on livestock farms will be hugely detrimental to the wider community. I myself own and operate a laying hen farm and have beef cattle as well and I have concerns about my future in farming in this community because of the proposed wind turbines.

My concerns are easily illustrated. In my travels through wind turbine areas such as Ripley, Ashfield/Colbourne/Wawanosh and Kincardine I have observed that livestock farms leave and barns stand empty. Why? Furthermore most houses are boarded up and people move away. The land use changes and becomes cash crop only with very few people living in the turbine area. Why? We would like to know answers. It would appear that those who are not immediately affected by wind turbines stay living there. It would appear that those who are affected leave as soon as it is economically feasible for them to arrange to do so. Such effects on our local community around Listowel would be devastating both socially and economically and our Provincial government and its institutions are wading into a moral and legal morass for permitting and promoting such effects on local communities.

Any study of the effects of wind turbines needs to include not only those who currently live in the area (possibly because they are not affected) but also those who have had to move away (possibly because they were affected). This potential for bias in a study needs to be accommodated.

Our community has expressed near unanimous opposition to this project in a poll that revealed that 96% of residents in the area are not supporting this project. Both municipal

councils in the area are also not supporting the project. Furthermore my concerns for my family and my farm operation are shared by other farm communities in Ontario and Canada.

I hope this study will help to address my concerns and establish standards that will protect the health of my family. Perhaps Agriculture Canada can partner with Health Canada in this study to do the research into impacts on livestock farms.

Sincerely,

Jack Hovius
5515 Line 84
R. R. # 4 Listowel, Ontario
N4W 3G9
519 – 291 – 4286

Cc. Gary Schellenberger, MP, Perth-Wellington
Cc. Randy Pettapiece, MPP, Perth-Wellington
Cc. Jenny Denhartog, staff member, Christian Farmers Federation of Ontario

2. Letter to Ms Doris Dumais, Ministry of Environment with copies to others

Jack Hovius
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Listowel, Ontario
N4W 3G9
e-mail: jahovius@porchlight.ca
phone: 519 – 291 - 4286

December 5, 2012

Doris Dumais,
Director,
Environmental Approvals Access and
Service Integration Branch.
2 St. Clair Ave West,
Floor 12A
Toronto, ON
M4V 1L5

I am writing to object to Invenegy's Industrial Wind Turbine project in the Listowel area (FIT# FF91BTO). They have failed to properly address my concerns as a resident in the project area. In June at the public information center meetings in Listowel in a

Town Hall type of question and answer session, Invenergy was publicly asked if they would shut down any offending turbines that are resulting in negative health outcomes for nearby residents. After skating around the question for a period of time, they publicly gave the simple but not very acceptable answer to our community, "NO". This is an unsatisfactory answer to the residents of the project area and of great concern to me personally.

This proposal to place turbines near our farm and in our community by Invenergy is of great concern to my family because it has become evident in the last few months that my daughter is one of that part of the population that suffers immediate health effects when approaching and within a turbine area. Like any other illness from an environmental exposure, some people exhibit symptoms after a short exposure and some only after exposure over a period of time, while some experience symptoms after a year or more and some apparently have or notice no effects. However our daughter has the immediate effects of pressure in her ears, ringing in her ears and headache. The symptoms start in the vehicle about 2-4 km away from the turbines (well beyond MOE's arbitrary 550 meter setback) as we approach the turbine area. The severity of symptoms increase with proximity to the turbines and with a longer duration of stay in the area and symptoms seem to disappear more slowly if she is exposed longer. A one half hour exposure results in symptoms severe enough to have her begging to leave the area.

In conversation with a wind company spokesman, he said that these symptoms are the result of the anxiety that comes from the visual cue of wind turbines and the fear generated by the thought of being near them. In other words, I would take this to mean that they consider the symptoms to be psychosomatic or the result of annoyance, and therefore it is her own fault for thinking about them and fearing them. This is clearly not the case since her first exposure was driving past wind turbines without any concerns about it, and after the fact, linking the symptoms she suddenly experienced with the location in which they started, that is near turbines. Likewise, she linked the cessation of symptoms to the time shortly after leaving the turbine area. In the second incident, we, the parents, in a blind test drove her into a turbine area and she was totally unaware of our intentions to test turbine exposure (for her, a blind test). The turbines were not visible over the crest of the hill and she had no anticipation or knowledge that we were approaching turbines, and yet she complained of pressure and headache starting about 2 km before we crested the hill and saw the first turbine. Note that she complained of the symptoms before she realized the purpose of our trip and before she spied the first turbine. Since then several test visits to turbine fields have repeatedly confirmed the symptoms (but these times with her consent and knowledge since it was no longer possible for us to keep our intentions secret and do a blind test).

The sudden onset of symptoms may seem extreme and dubious to you but her grandmother experienced similar effects when close to industrial wind turbines. Another family acquaintance also experiences discomfort when driving past wind

turbine areas. Anecdotally, but not personally, I have heard of 4 others who experience immediate effects. One cannot therefore say that these are isolated incidents since I have not searched out such people just to amplify the credibility of my concerns. If I have encountered this level of problems in my limited number of acquaintances, there can be expected to be many more. Available documentation shows this to be so.

If the turbines are placed close to our home as proposed (about 1.8 km away), it would no longer be possible for my daughter to continue living at home. Nor would it be possible for her to even visit her home when the turbines are operating. We would be involuntarily exposed 24 hours a day and 7 days a week, as long as the wind is blowing. It is totally unacceptable for such a burden to be placed on my family, and for such a violation of my personal property and home to be permitted.

While some might consider these claims spurious, I would remind you that a recently published study showed serious health impacts to those living within 1.4 km of an IWT and there appears to be in the graphs a dose response effect showing continuing but decreasing effect in the control group at distances of 3-6 km. (Nissenbaum MA, Aramini JJ, Hanning CD. Effects of industrial wind turbine noise on sleep and health. *Noise Health* 2012;14:237-43). Many reports have told of residents strongly in favour of wind turbines until they start operating and then suddenly they are no longer in favour because of negative health effects that correlate with operating turbines. This is clearly not annoyance or negative bias. Therefore it should be no surprise that my daughter and many others can verify and testify that they are being forced to endure, against their will, the deleterious effects of these industrial installations in their local environment and residential areas.

Invenergy has failed to inform the public in the project area of such possible adverse affects and has furthermore refused to make proper accommodations to adverse effects such as committing to shut down problem turbines. Neither the general public nor signed on contract holders have been informed of these potential health effects on residents and neighbours in the project area in spite of world wide documentation of adverse health effects that start when the turbines commence operation. This is serious negligence and a lack of full disclosure by Invenergy to our community.

In light of Invenergy's failure to inform anyone prior to (or for that matter, after) pursuing contracted landowner agreements, the MOE should properly consider it a moral and legal obligation to reject any future REA application that may be submitted by Invenergy. A community wide poll has indicated that in our community, 96% of the residents are not in favour of this project proceeding and both municipal councils (North Perth and Perth East) in the project area have come out against this project. We trust that MOE will deal appropriately with Invenergy's negligence to inform and unwillingness to respond to local concerns by denying any REA application.

I hereby put MOE on notice that they have not only an opportunity, but an obligation to respond and deal appropriately and responsibly with such a public health concern and problem. It is to be expected that the MOE, as an arm of a democratically elected Ontario government, will respect and honour the needs of its citizens more than the selfish desires of an outsider company for profits while continuing to ignore the needs and desires of people and local communities.

In short I would summarize.

1. Invenergy has secretly and covertly pursued contracts with a few land owners without general public or municipal council knowledge causing great social upheaval.
2. Invenergy has failed to properly inform anyone of potential negative health outcomes before or after seeking secret contracts and before or after there was public knowledge of their community changing and damaging proposals and intentions.
3. Invenergy, in spite of what they may say, has essentially NO community support.
4. Invenergy has threatened the health and home of my family by pursuing the installation of Industrial Wind Turbines close to our residence and to our daughter who has immediate and debilitating health issues even at a setback four times greater than the arbitrary MOE setback of 550 meters.

MOE is hereby on notice of my daughter's health issues near turbines. MOE has an opportunity to be proactive in this situation before an REA is given, unlike some other situations where an REA has already been granted and the project is constructed before health problems are brought to MOE's attention. MOE will not be able to say that it did not know this in advance of an REA application by the proponent.

Therefore, on these grounds, I am calling on MOE to reject any REA application by Invenergy for this project.

I and my daughter and my family thank you for your attention and response and action in this matter.

Sincerely,

Jack Hovius.

B.Sc. (Agr.)

(resident of North Perth and the North Perth - Perth East project area)

cc: The Honourable Jim Bradley
Minister of Environment

The Honourable Chris Bentley
Minister of Energy

The Honourable Deb Matthews
Minister of Health

Mr. Gary Schellenberger, MP Peth-Wellington

Mr. Randy Pettapiece, MPP Perth-Wellington

Municipality of North Perth

Township of East Perth

7 Conclusion

This submission supplements those previously made which have expressed concerns regarding risks to families including members who have not reached the age of majority.^{10 11 12 13 14 15 16 17} This list is not exhaustive.

I am aware where a youth had to leave her home ahead of her time, a distressing situation.

The risk to children and those under age has been known for some time. During the Green Energy and Green Economy Act hearings, a group of families reported:

“Due to concerns for the health of grandchildren, grandparents, older children, extended family members and friends, we all strongly discourage extended visits to our homes. We had to meet somewhere else other than our homes for celebrations.”¹⁸

“Who is accountable for the unseen health changes occurring within our bodies from basically living in a vibrating microwave? What protection is there for a developing two-year-old who cries endlessly and pulls at her ears when she’s in her home, but not when she’s away from the project? Who’s accountable to the young family who are expecting their second child? What if there’s a deformity or a miscarriage resulting from infra-sound, low-frequency sound and the electrical pollution?”¹⁹

The role of the New Experts has been described in previous Health Canada submissions. Their reports should be taken seriously.

“The concept of Soundscaping has gained recognition.^{20 21 22 23 24} It is considered to be different from noise control engineering.²⁵ Soundscaping considers the people living in the environment as local experts,²⁶ an essential component of the evaluation,²⁷ and that perception of the soundscape“ can provide comfort, tranquility, and needed information to the person concerned or may be a source of annoyance.”²⁸

“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.”²⁹

Industrial wind turbine facilities are imposed on residents and communities without consent.

Krogh and Horner (2012) submitted peer reviewed comments on the Health Canada Wind Turbine Noise study associated with the imposition of industrial wind turbine facilities on rural residents and communities without consent.

"10.1 Ethics

The issues surrounding the adverse health effects of industrial wind turbines are complex. Ethical issues require clarification some of which may entail legal-ethical advice.

Subjecting non-consenting individuals to an exposure which is known or suspected to have adverse health effects and then studying these individuals raises ethical issues.

Inequity exists as participants who host industrial wind turbines typically “agree” and/or are compensated to accept noise, nuisance and / or other effects through a contractual arrangement. Non participants typically have not agreed, or may not be given a similar opportunity to be compensated for noise, nuisance and / or other effects.”³⁰

Lansink (2013) states:

“Each transfer/deed included the following “Transfer of Easement in Gross” covenant:

“free and unencumbered easement...over, along, and upon the Transferor's Lands for the right and privilege to permit heat, sound, vibration, shadow, flickering of light, noise (including grey noise) or any other adverse effect or combination thereof resulting directly or indirectly from the operation of the Transferee's wind turbine facilities situated...within the Townships of Melancthon and Amaranth, in the County of Dufferin...”.

“...The Transferor further acknowledges and agrees that the operation of the Transferee's wind turbine facilities located on the Leasehold Lands may affect the living environment of the Transferor and that the Transferee will not be responsible or liable for, of and from any of the Transferor's complaints, claims, demands, suits, actions, or causes of action of every kind known or unknown which may arise

directly or indirectly from the Transferee's wind turbine facilities on the Leasehold Lands to the extent permitted by this Easement”..”³¹

In a submission made on behalf of a family from Nova Scotia to the Health Canada Minister of Health, Krogh commented:

“Under normal circumstances, if someone claims to be affected by an exposure to agents such as peanuts, smoke, sulfites, scents, certain food, sea food, noise etc, the individual can avoid or remove the source.

If it is serious or life threatening regulators and/or society rise to the occasion and take steps such as banning peanuts in schools; no scents in offices; noise control for autistic or children with ADD or noise sensitive individuals; no sulfites at salad bars; seafood; and labeling non-medicinal ingredients in consumer and prescription products and food, including fast food. This is so that individuals at risk can avoid the exposure.

In the case of wind turbine facilities, they are imposed on the population, there is no remedy and those exposed can't avoid or remove the source.”³²

Horner (2013) submitted a request that:

“In the interest of human health protection I request that representatives of: CanWEA; the Government of Canada; Health Canada; and the Government of Ontario; provide Canadians immediate and full disclosure of the health effects “conclusively demonstrated” from exposure to wind turbine noise.”³³

Previous submissions have noted that action by Health Canada should support its “Mission and Vision”³⁴ and “Objectives”.³⁵

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.

This submission reports the impact of a family member under the age of majority being exposed to wind turbines. The experiences described should be taken seriously.

The family requests assistance from Health Canada to take action to protect a family member and other families at risk:

“In all cases, noise should be reduced to the lowest level achievable in a particular situation. Where there is a reasonable possibility that public health will be damaged,

action should be taken to protect public health without awaiting full scientific proof.”
36

Respectfully submitted on behalf of Jack and Anna Hovius, their daughter and family, from Ontario.

Carmen Krogh, BScPharm
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carmen.krogh@gmail.com

¹ Health Canada submission_November 23 2012 FINAL

² Health Canada submission_Grey Highlands November 24 2012 Final

³ Health Canada_Risks to children December 27 2012 FINAL

⁴ Confidential Health Canada submission November 26 2012 Redacted February 2 2013

⁵ Open Submission Health Canada submission February 2 2013 FINAL

⁶ Update_Health Canada submission_Grey Highlands February 2 2013 Final

⁷ Pre_Post_Wind turbine submission_Updated February 4 2013

⁸ 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>

⁹ 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>

¹⁰ Health Canada submission_Alberta_October 21 2012 Final

¹¹ Health Canada submission_November 23 2012 FINAL

¹² Health Canada submission_Grey Highlands November 24 2012 Final

¹³ Health Canada_Risks to children December 27 2012 FINAL

¹⁴ Confidential Health Canada submission November 26 2012 Redacted February 2 2013

¹⁵ Open Submission Health Canada submission February 2 2013 FINAL

¹⁶ Update_Health Canada submission_Grey Highlands February 2 2013 Final

¹⁷ Pre_Post_Wind turbine submission_Updated February 4 2013

¹⁸ Hansard, Official Report Journal of Debates Green Energy and Green Economy Act Ripley Group Standing Committee on General Government April 15, 2009 Pg G547

¹⁹ Hansard, Official Report Journal of Debates Green Energy and Green Economy Act Ripley Group Standing Committee on General Government April 15, 2009 Pg G548

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- ²⁰ 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/>
- ²¹ 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>
- ²² 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)
- ²³ 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
- ²⁴ Axelsson, Östen, Introducing soundscape, AESOP, 2012, 26th Annual Congress, July 11-15, Ankara, Turkey
- ²⁵ 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.
- ²⁶ 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
- ²⁷ Brigitte Schulte-Fortkamp, Bennett Brooks, Interventions through the soundscape approach. The Journal of the Acoustical Society of America. 10/2010; 128(4):2370.
- ²⁸ 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.
- ²⁹ 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
- ³⁰ Open Letter Peer Review Health Canada Wind Turbine Noise and Health Study Submitted by Carmen Krogh, BScPharm and Brett Horner BA CMA, September 7, 2012
- ³¹ Lansink, B., AACI, P.App, MRICS, February 2013. Case Studies Diminution / Change in Price Melancthon and Clear Creek Wind Turbine Analyses Municipal Property Assessment Corporation (MPAC) Current Value Changes
- ³² Open Submission: Industrial Wind Turbines can Harm Humans Health and Social-economic impacts 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 February 2, 2013
- ³³ Open letter conclusively demonstrated wind turbine health effects March 10 2013
- ³⁴ Health Canada, About Health Canada, About Mission, Values, Activities, Retrieved from <http://www.hc-sc.gc.ca/ahc-asc/activit/about-afropos/index-eng.php>, Cited August 24, 2012
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