

**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**

**November 21, 2012**

Author's Note: This submission is being made on request and on behalf of the Brindley family who left their farm in Ontario and now farm in Saskatchewan. Documentation regarding this submission has been verified by the family.

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Noise Exposure Assessment*

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**November 21, 2012**

The Honourable Leona Aglukkaq  
Minister of Health  
Health Canada  
[minister\\_ministre@hc-sc.gc.ca](mailto:minister_ministre@hc-sc.gc.ca)

Copy:

The Right Honourable Stephen Harper  
Prime Minister of Canada  
[pm@pm.gc.ca](mailto:pm@pm.gc.ca)

David S. Michaud, PhD  
Principal Investigator  
[david.michaud@hc-sc.gc.ca](mailto:david.michaud@hc-sc.gc.ca)

November 21, 2012

Dear Minister Aglukkaq,

Re: Health Canada Wind Turbine Noise and Health Study

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Health and Social-economic impacts in Ontario  
Submitted by Carmen Krogh, BScPharm  
November 21, 2012  
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## 1 Background

On September 15, 2012, I made a submission to Dr. Michaud on behalf of the Brindley family who reported the negative affects of exposure to electrical pollution associated with the start-up of a wind energy facility.

My original submission of September 15<sup>th</sup> and this submission of November 21, 2012 on behalf of the Brindley family is intended to contribute to the study design of the *Health Canada Wind Turbine Noise and Health Study* and to the recommendation to convene an inquiry-investigation before finalizing the study design.

In addition, my submissions of August 31<sup>st</sup> and September 20<sup>th</sup>, 2012 made on behalf of the Whitworth family have commonality and contribute to the reports that some wind energy facilities are negatively affecting living environments.

The substantial detail about the issues and attempts by both families to resolve their situation, each from a different project many miles distant from each other, should be of concern to the federal authorities.

## 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 reports of sleep disturbance, annoyance, mood disorders, such as stress, anxiety, depression, frustration, financial burdens, and social impacts within the community and other health related issues.

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

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 any family reporting an uninhabitable home to restore their physical, mental and social well-being. Based on the elements of the Auditor General's Report, 2012, there may be an opportunity to obtain funding to take remedial action <sup>1</sup> 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.

Any errors or omissions are unintended.

### **4 Introduction**

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

This information is being provided at the request of the Brindley family. The information used to compile this submission has been verified and confirmed by the family.

The Brindley family reports it has made significant effort to obtain resolution through various mechanisms. The lack of resolution associated with the start up of operations of an industrial wind energy facility has led to each family member experiencing a degradation of health, social-economic, consequences to their livelihood and altered quality of life.

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" <sup>2</sup>

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)." <sup>3</sup>

## 5 Particulars

### 5.1 General comments

The family reports:

"In March of 2006, the Kingsbridge 1 Wind Farm became operational, however; as every company of this size must do they have to build their equipment. So the turbines were built, during this time period while they were NOT connected to the power line they still turned, the closest of the 7 turbines was approximately 656m away with the main transmission line only 43 meters away from both the house and the barn. This turning created a lot of "white noise" which was disturbing to sleep and concentration levels started to decrease. However, once they became "operational" the turning speed increased and the issues got worse.

Some of the issues included headaches – constantly, lack of concentration – unable to do basic math, lack of sleep.

Our family dog also exhibited behavioural changes including being lethargic.

Our livestock started displaying behaviour issues; they were very nervous and began showing untrustworthy attributes. These cattle were previously quiet cattle. Meaning that after they calved you could handle them, pet them and trust our children around them. However this was just the start of what was to come.

Testing was started by Hydro One to see what the issue was: as the cattle were very jumpy and also, the basic shock levels were increasing. (You know like when you drag your feet across the carpet then touch someone or reach for a door. Only thing was this was happening around the barn yard and outside the house as well.) Due to the increasing "shocks" we had to wear shoes in our house at all times. You had to be very careful when you went to shower, bathe or do dishes, as the shocks were much stronger when the turbines were working. However, the tests were never completely accurate as the wind company kept turning off the turbines in our area when they knew testing was going on. That didn't stop the issue however, as they still had many others pumping electricity down the lines past our farm.

We received a letter, (which is an overview of the AMEC Engineer's Report,) along with the Engineer's Report from Epcor. This letter is attached in the Appendix.

In the 01 Feb 2007 letter, Epcor admits that the voltage on the Hydro One's neutral is a result, of induction from their lines, which are on the same pole as the Hydro One's lines. We never had problems with stray voltage or static electricity IN/ON the barn or farm, before the wind turbines and transmission lines were put up and started generating power.

PLEASE NOTE:

We lived very close to the current Kingsbridge I Wind Farm and we did up until the end of February 2011, when our home was devastated by fire.

We had carried on our business of livestock farming, from spring 2006, when the Kingsbridge I Wind Farm became fully operational till fall of 2008, when we ended up selling our herd of cattle and calves. During this time, we tried to ease the "cruelty" of physical and health effects that our livestock herd was subjected too.

We had FRAAB AGRI SERVICES, Dr. James R. Morris, PhD, PAg, Ridgetown, ON, monitoring our herd. We also had Hydro One doing months of stray voltage testing and they showed how the power was transferring, via induction, from the wind transmission lines onto Hydro One's neutral and then onto our farm. At one point, they could calculate how much power was being produced from the wind turbines and the power going down the wind transmission lines. Kingsbridge I, did put a ground rod at every pole to our gate. Then AFTER Ross was found "unconscious" (13Mar2007) under the loader tractor, Hydro One/Epcor had the neutral line "quickly" extended the full length of our side road, instead of stopping at our service.

Even after the ground rods, and extension of the neutral where done.... The people and cattle were still suffering."

## **5.2 Impacts on human health** (Some photos provided in Appendix: more available on request)

The family reports:

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“Some of the symptoms include:

- § Unexplained bloody noses, nausea
- § Pain/burning in the feet, bad headaches, dizziness
- § Heart palpitations, heavy chest, (when bad didn't know if having heart attack or not)
- § Sudden changes in mood in extremes – from pleasant to hostile
- § Deep frustration
- § Inability to sleep (insomnia), EYES swollen and painful concentration problems – can be trying to balance check book and completely lose train of thought, or going to get something from another • room 5-10 feet away and not remember what you were getting (EXTREMELY SHORT memory)
- § Injuries/cuts didn't heal very well, or took a very long time to heal
- § Ringing in the ears, vertigo
- § Teeth and gums aching (like your teeth are being RIPPED out with no freezing)”

### 5.3 Health Problems of cattle within a stray voltage situation (Some photos provided in Appendix: more available on request)

The family reports:

“We had 82 head of beef cows that would go away from the farm for pasture in the spring but come back in the fall.

*Spring 2006-April 4, 2007*

We bought 2 Bulls and when they where trucked to the farm... they stepped off the trailer and turned around and climbed back on, they must have knew something wasn't right. The bulls became very aggressive and nervous when in our front yard paddock (between the barn and the road...transmission lines); we had one-bull charge baby calves throwing them into the air. (Unexplainable) We got rid (sold) of the first bull that did this, and put the other bull out front and when he started doing it also we realized something was wrong... he was put to the back corral also.

The cows would be excessively nervous, which was unusual as they where normally quiet/tame. The cows would be stepping or moving their feet (dancing) and switching their tails, constantly.

When the cows were nervous /jumpy and in a pen with their baby calf, they would lay right on the calf (it would die).

Cows would get bloody noses and later (5 wks), they abort their calf. Autopsy final diagnosis: ABORTION-PLACENTISIS AND FETAL MUMMIFICATION.

Cows would go "down" One cow #17 the vet actually marked on his bill (possible diagnosis) Dx CNS: RABIES, space occupying lesion, or hypoxia (the vet said she would be dead by morning but she was still alive)

Cow # 17 symptoms

- § foaming at the mouth
- § heart rate double
- § respirations labored
- § appearance of chewing and gagging motion with her mouth
- § coughing
- § moving her head from side to side
- § pupils were fixed and dilated
- § her tongue was white

When these down cows did calve, the calves were very lethargic, weak, had to be put up to the cow and assisted to suck.

In general, a lot of the cows seemed to lack the energy and muscle contractions to expel calves properly during parturition (delivery). 1 in 3 calves had to be pulled and most were easy pulls; there was no reason for the cow not delivering the calf.

Cows prolapsed (the uterus came out after the calf was born) and the vet had to come and get it back in.

In another cow her cervix did NOT dilate but the uterus was. The vet said it would kill the calf to pull it and probably wreck the cow, so the only option was a cesarean-section (operate and take the calf out the side of the cow), which was expensive.

In yet another circumstance, another cow did not fully dilate even with both of her water bags out we had to get the vet to come out and he had a difficult time pulling it (because she wasn't dilated).



Mastitis is also a factor and we had to keep the utters stripped out, monitor that the cows did not come down with a fever, and also keep the calf fed or bottle fed it till her milk became good.

A number of the calves were weak, or non-responsive, or had swollen joints, or poor sucking ability (It was more pronounced when the calf had received a "shock" just after they where born and trying to stand up, in which you would see them jerk, like as if they were being shocked by an electric fence).

The cattle seemed like they were not responding to the medication, as if their immune system was not working right.

The water troughs were moved around in the pens in order to keep cattle drinking, otherwise they would only lap at the water or not drink at all (they would gaunt out). There was a lot more of what I would say is defecation and urination which meant the pens would have to be cleaned out more to keep them dry and bedded to prevent sickness.

The cows would also be limping or have swollen hocks. The medicine did not work on this problem. So unless we saw other problems that medication might help we did not keep needling the cattle.

Some days the cows would NOT eat from the feed wagon or the round bale feeder, even though it was full of silage and hay, and the next day it would be licked clean.

Some of the cows have labored breathing, the symptoms have not cleared up, even though they went away from the farm to pasture (miles away). These cows have not got their body shape back (loosing weight).

*April 4, 2007–Dec 2007*(after the neutral was installed, to make a circuit, the recorded voltage dropped)

Cattle had limping and tender feet and swollen hocks.

We still had to pull calves due to cows exhibiting the lack of energy and muscle contractions to expel calves properly during parturition (delivery).

There still were abortions, prolapses, mastitis (with the cow getting so sick we almost lost her and the vet bill, more than we would get for the calf).

There were times when the cattle would go off their feed, and then we had to monitor them more closely to make sure they DO eat (so they don't go out and lose weight)

Cattle were restless, constantly on the move, switching their tails, and sometimes even running in the outdoor confinement area (mostly when there is moderate to high winds and I would assume the stray voltage is higher).

Some cows appeared to be losing weight

NONE of the outlined Animal and Human symptoms existed, to this extreme, PRIOR to the Epcor's Kingsbridge 1 Wind Farm or the transmission lines being installed.

WE REALLY BELIEVE THAT THE PROBLEMS OF KINGSBRIDGE 1 SHOULD HAVE BEEN FIXED AND THE COMPLAINANTS SATISFIED BEFORE K2 WIND PROJECT WENT AHEAD.

In conclusion, Kingsbridge 1 adversely affected our lives and our business. The problems created were not resolved. Our lives have been irreparably changed and the right to conduct our business and live in a healthy environment on our family farm was taken away from us.

We have legitimate fear that many other landowners in any new phase, will find themselves in the same position as us, if the companies aren't first directed to fix the problems at hand before they are allowed to proceed with any new projects.

We hope that the information has educated Health Canada on impacts (both to human and animal) that Wind Companies do not disclose to the public, due to the companies own agenda. Also, that we are real people who have lived thru this "experience" and have lost our livelihood to it, with NO compensation, except for the government branding us as NIMBY persons."

## 6 Results and Consequences

The family reports:

“December 22, 2006, a letter sent was sent and the response that we received from the Ministry of Environment dated January 9, 2007, says that the proponent for the Project should be prepared to attempt to resolve the issues and concerns raised in your request. The problem with the attempt was ... it was not enough! You can make something “look” like you are doing a whole lot but in actuality, nothing WAS accomplished.

OVER 6 YEARS HAVE PASSED WITH NO RESOLUTION AND NOW THE COMPANY IS CONSIDERING ADDING A “PHASE TWO” WITH 138 MORE TURBINES. HOW COULD IT EVEN CONSIDER ADDING MORE TURBINES WHEN THE PROBLEMS IN KINGSBRIDGE 1 HAVE NOT BEEN FULLY ADDRESSED/FIXED?”

## 8 Conclusion

The Brindley family reports it has extensive documentation from 2006 to the time of leaving their home in 2011.

Conducting an investigation early and prior to finalizing the study design would assist with determining its design. As well, the Health Canada health study should consider the harm currently being reported and future risks expected with the proliferation of more wind energy facilities.

I note that Health Canada’s “Mission and Vision” includes:

“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.”<sup>4</sup>

And that Health Canada’s “Objectives” include:

“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.”<sup>5</sup>

Others with similar concerns may not have identified themselves to Health Canada.

I am aware of other families reporting similar electrical issues which exacerbate negative health, social-economic and well-being related issues and propose an inquiry-investigation, to prevent these negative effects being reported in post- and pre-turbine areas, and to contribute to the study design prior to its finalization.

The Krogh-Harrington submission of October 31, 2012<sup>6</sup> indicated New Experts i.e. humans, “are objective measuring instruments...”:<sup>7</sup>

“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.”<sup>8</sup>

As the result of the anticipated proliferation in the future<sup>9</sup> of industrial wind turbine facilities in Canada, it is expected more Canadians will be at risk of harm.

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.

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 as proposed in the submission of October 31, 2012. <sup>10</sup>

In the meantime, due to my concern for the health and well being of those exposed to wind turbine facilities, I am requesting that emergency funding be provided to relocate affected families to an area in order to restore their physical, mental and social well-being.

Based on the elements of the Auditor General's Report, 2012, there may be an opportunity to obtain funding to take remedial action <sup>11</sup> regarding affected sites.

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.

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.

Respectfully submitted on behalf of the Brindley family,

Carmen Krogh, BScPharm  
Ontario, Canada  
Cel 613 312 9663  
[krogh@email.toast.net](mailto:krogh@email.toast.net)

## Appendix

### 1. Location of farm house and buildings



### 2. Affects on the family



2.1 Sores took long time to heal



2.2 Eyes sore and painful



**2.3 Feet got sores on (voltage through the floor)**

### **3. Affects on cattle**



**3.1 Foaming at the mouth**



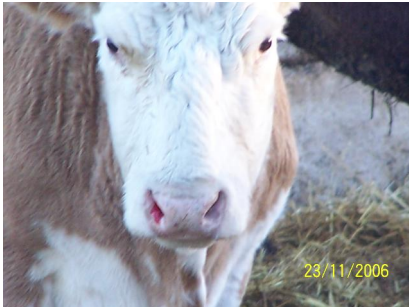
**3.2 Swollen joints and deformities**



**3.3 Weak, or non-responsive calf  
(this one ended up dying)**



**3.4 Cows feet had sores on  
them/limping**



**3.5 Cows got bloody noses and  
later (5 wks) they abort their calf**



## Letter of February 1, 2007

200 University Ave  
Suite 1301  
Toronto ON M5H3C6  
Canada



February 1, 2007

Mr. Ross Brindley  
82328 Council Line Road  
Goderich, ON N7A 3X8

Dear Mr. Brindley:

I am writing to provide you with an update of investigations into stray voltage issues at your property. We have been working at times with HydroOne on this issue, but you should also contact them directly for their results and comments.

We have understood from Hydro One that the voltage on their neutral line entering your property has had readings that are, at times, on the upper end of their acceptability range. Please contact Hydro One for more information on their test data on their neutral line, the acceptability limit, and how their limit is set. EPCOR has also taken actions to determine if there is a problem with respect to our lines that run in the vicinity of your property:

- We have hired AMEC, a well-qualified engineering company, to advise us on this issue.
- We have completed a thermal scan of our lines and insulators. This scan could have detected damaged equipment that was the source of stray voltage, however, no damage was found.
- We have met with you to review data that you have obtained, and to note the testing location and procedure.
- We have had meetings with Hydro One to pool information and determine likely causes.

From these investigations, we believe that the voltage on Hydro One's neutral is the result, at least in part, of induction from EPCOR's lines on the same poles as Hydro One's lines. Current flowing through an electric line generates a magnetic field around the line. When another line is in this field, the field can induce a current in that second line. The Ontario Electrical Code specifies the minimum distance between lines, which was followed. The use of the standard separation is meant to prevent the induction from occurring, and although it appears that some induction is taking place, I would note Hydro One indicates it is generally within their acceptable limit.

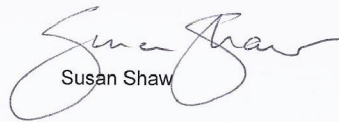
However, EPCOR is willing to take steps to reduce this voltage. We are contracting with Hydro One to provide additional grounding on hydro poles in the vicinity of your property. Testing has indicated that this is likely to reduce the voltage level on the neutral, although we have not been able to predict the amount of the reduction. This should help with any stray voltage issues that you are experiencing.

It is also important to note that our consultants believe that in addition to this stray voltage issue, some of the concerns that you are reporting are the result of static electricity. In particular, those tests taken at your gate are measuring static, which is a naturally occurring phenomenon, unrelated to the power lines or wind turbines. Also, the tests at the barn cladding seem to be an issue of appropriate grounding in your barn.

For further information, a copy of the report that we commissioned from AMEC is attached.

Please contact me at 519.435.1222 if you have any questions. We will be in further contact to inform you of the schedule for the grounding work.

Sincerely,

  
Susan Shaw

Cc: Rob Vader, Hydro One  
ACW Township Council  
Chris Hutt, MOE

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<sup>1</sup> 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](http://www.oagbvg.gc.ca/internet/English/parl_cesd_201205_03_e_36775.html#ex5)

<sup>2</sup> 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>

<sup>3</sup> 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>

<sup>4</sup> 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

<sup>5</sup> 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

<sup>6</sup> Open Submission, Update: Proposal for an Inquiry-Investigation into the Health including Socio-Economic Impacts of Industrial Wind Turbines in Rural Canada, October 31, 2012

<sup>7</sup> 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](http://www.acoustics.org/press/164th/Bray_2aNS6.html)

<sup>8</sup> Open Submission, Update: Proposal for an Inquiry-Investigation into the Health including Socio-Economic Impacts of Industrial Wind Turbines in Rural Canada, October 31, 2012

<sup>9</sup> Science Advisory Board Meeting, Proceedings - Science Advisory Board (SAB), February 1-2, 2012

<sup>10</sup> 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 October 31, 2012 Submitted by Carmen Krogh, BScPharm and Beth Harrington, BMus

<sup>11</sup> 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](http://www.oagbvg.gc.ca/internet/English/parl_cesd_201205_03_e_36775.html#ex5)