March 21, 2013

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

Copy:

The Honourable Leona Aglukkaq Minister of Health, Health Canada minister\_ministre@hc-sc.gc.ca

Ms Kathleen Wynne Premier of Ontario <a href="mailto:kwynne.mpp@liberal.ola.org">kwynne.mpp@liberal.ola.org</a> <a href="mailto:kwynne.mpp.co@liberal.ola.org">kwynne.mpp.co@liberal.ola.org</a>

David S. Michaud, PhD
Principal Investigator, Wind Turbine Noise Study
Consumer and Clinical Radiation Protection Bureau
Healthy Environments and Consumer Safety Branch, Health Canada
david.michaud@hc-sc.gc.ca

Ms Cheryl Gallant, MP GallaC0@parl.gc.ca

Mr. John Yakabuski, MPP john.yakabuski@pc.ola.org

Open letter: Request that the Government of Canada discontinue Health Canada's ongoing experiment on Canadians exposed to wind turbines

Dear Prime Minister Stephen Harper

I am a published peer reviewed author on the subject of wind turbines and health effects <sup>1</sup> and have written to you previously.

I am writing to request that the Federal government immediately discontinue Health Canada's ongoing experiment on Canadians exposed to wind turbines.

Wind turbines can harm humans if placed too close to residents. <sup>2</sup>

Wind turbine sound is perceived by humans to be more annoying than transportation noise or industrial noise at comparable sound pressure levels. <sup>3,4,5,6</sup>

Open letter: Request that the Government of Canada discontinue Health Canada's ongoing experiment on Canadians exposed to wind turbines

March 21, 2013

Any errors or omissions are unintended

Peer reviewed and other references acknowledge modern wind turbines produce sound characteristics which are plausible causes for annoyance and/or other health effects. These characteristics include amplitude modulation (swooshing); <sup>7,8,9,10,11</sup>, audible low-frequency noise; <sup>12,13,14</sup> infrasound; <sup>15,16,17</sup> tonal noise, impulse noise; <sup>18</sup> and night time noise. <sup>19</sup>

Symptoms of annoyance include stress, sleep disturbance, headaches, difficulty concentrating, irritability, fatigue, dizziness or vertigo, tinnitus, anxiety, heart ailments, and palpitation. <sup>20</sup>, <sup>21</sup>, <sup>22</sup>, <sup>23</sup>

Representatives of Health Canada, including The Minister of Health <sup>24</sup> and Dr. David Michaud, <sup>25</sup> acknowledge noise induced annoyance and/or complaints are health effects. Dr. David Michaud is the Principle Investigator/Project Manager of Health Canada's Wind Turbine Noise study. <sup>26</sup>

Health Canada examined the scientific literature on wind turbine noise and determined the health effect "conclusively demonstrated" from exposure to wind turbine noise is an increase of self-reported general annoyance and complaints (i.e., headaches, nausea, tinnitus, vertigo). <sup>27</sup>

In Canada and elsewhere some people exposed to wind turbines experience physiological and/or psychological symptoms and/or reduced quality of life and/or degraded living conditions and/or adverse social economic impacts. Reported effects include annoyance and/or sleep disturbance and/or stress related health impacts and/or reduced quality of life. <sup>28</sup> <sup>29</sup> <sup>30</sup> <sup>31</sup> <sup>32</sup> <sup>33</sup> <sup>34</sup> <sup>35</sup> <sup>36</sup> <sup>37</sup> <sup>38</sup> <sup>39</sup> <sup>39</sup>

A 2009 panel report sponsored by American Wind Energy Association and Canadian Wind Energy Association determined "Wind Turbine Syndrome" symptoms such as headaches, nausea, tinnitus, vertigo "... are not new and have been published previously in the context of "annoyance"..." and are the "... well-known stress effects of exposure to noise ..." <sup>40</sup>

In some cases the effects are so severe that some Canadian families have effectively abandoned their homes and/or been billeted by wind energy developers and/or negotiated financial agreements with wind energy developers. <sup>41</sup>

Prevention of noise induced health effects is a fundamental health principle. <sup>42</sup> Harm to human health can be prevented with wind turbine setbacks and sound limits designed to protect humans from the health effects of unwanted wind turbine sound (noise).

Instead Health Canada representatives, including Dr. David Michaud propose wind turbine sound limits which are predicted to result in health effects (increase in percentage

Open letter: Request that the Government of Canada discontinue Health Canada's ongoing experiment on Canadians exposed to wind turbines

March 21, 2013

highly annoyed). <sup>43</sup>, <sup>44</sup>, <sup>45</sup> Proponents of wind energy development frequently cite these references co-authored by Health Canada's Dr. David Michaud.

In Ontario a non trivial percentage of Canadians exposed to the sound from wind turbines are expected to experience health effects. 46

Wind turbine development in Canada has resulted in the creation of a living laboratory where a non trivial percentage of exposed Canadians are predicted to experience "conclusively demonstrated" health effects from exposure to wind turbine noise. For years some Canadians have been exposed to these health effects. Now Dr. David Michaud has been granted the opportunity to lead a Health Canada study which intends to examine these health effects.

In my opinion Health Canada's proposal to expose Canadians to "conclusively demonstrated" and predicted health effects and then research the effect on humans is cruel and unethical. Canadian families should not be treated like rats in a laboratory.

I call on you as the Prime Minister of Canada to:

- discontinue Health Canada's ongoing experiment being conducted on Canadians exposed to wind turbines;
- provide full disclosure of the "conclusively demonstrated" and predicted health effects from exposure to wind turbine noise;
- take immediate action to protect Canadians from the "conclusively demonstrated" and predicted health effects from exposure to wind turbine noise;
- stop this preventable harm to human health.

Informed Canadians look forward to your response.

If you should have any questions or require copies of the references cited in this letter please do not hesitate to contact me.

Respectfully submitted,

Brett Horner BA CMA Killaloe, ON Canada brett.s.horner@gmail.com 613-754-2736

## **Attachment**

Open letter conclusively demonstrated wind turbine health effects March 10 2013.pdf

Open letter: Request that the Government of Canada discontinue Health Canada's ongoing experiment on Canadians exposed to wind turbines

March 21, 2013

Any errors or omissions are unintended

## References

Retrieved from http://www.canwea.ca/pdf/talkwind/Wind Turbine Sound and Health Effects.pdf <sup>9</sup> Leventhall, H. G., Wind Turbine Syndrome: An Appraisal. February 2010, Retrieved from: http://www.windustry.org/wind-turbine-syndrome-myths-and-facts-webinar

<sup>&</sup>lt;sup>1</sup> Horner B, Jeffery R., Krogh C., "Literature Reviews On Wind Turbines And Health: Are They Enough?", Bulletin of Science Technology & Society 31: 399, (2011)

<sup>&</sup>lt;sup>2</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122. Retrieved from <a href="http://www.ert.gov.on.ca/english/decisions/index.htm">http://www.ert.gov.on.ca/english/decisions/index.htm</a>

<sup>&</sup>lt;sup>3</sup> Pedersen, E., & Persson Waye, K., "Perception and Annoyance Due To Wind Turbine Noise–A Dose Response Relationship", Journal of the Acoustical Society of America, 116, 3460-3470, (2004)

<sup>&</sup>lt;sup>4</sup> Pedersen, E., & Persson Waye, K., "Wind Turbine Noise, Annoyance and Self-Reported Health and Well Being in Different Living Environments", Occupational and Environmental Medicine, 64, 480-486, (2007) doi:10.1136/oem.2006.031039

<sup>&</sup>lt;sup>5</sup> van den Berg, F., Pedersen, E., Bouma, J., & Bakker, R., Project WINDFARM Perception: Visual And Acoustic Impact Of Wind Turbine Farms On Residents (Final Report FP6-2005-Science-and-Society-20, Specific Support Action, Project no. 044628), Groningen, Netherlands: University of Groningen and the University of Gothenburg, (2008)

<sup>&</sup>lt;sup>6</sup> Pedersen, E., Bakker, R., Bouma, J., & van den Berg, F., "Response To Noise From Modern Wind Farms In The Netherlands", Journal of the Acoustical Society of America, 126, 634-643, (2009)

<sup>&</sup>lt;sup>7</sup> Leventhall, G., "Infrasound from Wind Turbines: Fact, Fiction or Deception", Canadian Acoustics, 34, 29-36, (2006)

<sup>&</sup>lt;sup>8</sup> Colby, W. D., Dobie, R., Leventhall, G., Lipscomb, D. M., McCunney, R. J., Seilo, M. T., & Søndergaard, B., Wind Turbine Sound and Health Effects: An Expert Panel Review, Washington, DC: American Wind Energy Association and Canadian Wind Energy Association. (2009)

<sup>&</sup>lt;sup>10</sup> Dr. Colby's presentation to Nova Scotia Department of Energy on March 4, 2010

<sup>&</sup>lt;sup>11</sup> Leventhall Geoff, Wind Farms and Human Health, Retrieved from

http://www.nhmrc.gov.au/ files nhmrc/file/media/events/windfarms science forum geoff leventhall.pdf

<sup>12</sup> Møller, H., & Pedersen, C. S., "Low-Frequency Noise from Large Wind Turbines", Journal of the Acoustical Society of America, 129, 3727-3744, (2011)

<sup>&</sup>lt;sup>13</sup> Minnesota Department of Health, Public Health Impacts Of Wind Turbines, (2009, May)

<sup>&</sup>lt;sup>14</sup> Howe Gastmeier Chapnik Limited. (2010, December 10). Low frequency noise and infrasound associated with wind turbine generator systems: A literature review (Rfp No. Oss-078696). Mississauga, Ontario, Canada: Ministry of the Environment.

<sup>&</sup>lt;sup>15</sup> Salt AN, Hullar TE. Responses of the ear to low frequency sounds, infrasound and wind turbines. Hearing Research. 2010; 268:12-21.

<sup>&</sup>lt;sup>16</sup> Salt, AN, and Kaltenbach, JA, "Infrasound From Wind Turbines Could Affect Humans", Bulletin of Science Technology & Society, 31: 296, (2011)

<sup>&</sup>lt;sup>17</sup> Farboud A, Crunkhorn R, Trinidade A. 'Wind turbine syndrome': fact or fiction?. J Laryngol Otol. 2013 Jan 21:1-5. [Epub ahead of print]

<sup>&</sup>lt;sup>18</sup> Thorne B. The problems with noise numbers for wind farm noise assessment. Bulletin of Science, Technology & Society. 2011;31:262-90.

<sup>&</sup>lt;sup>19</sup> Pedersen E, Bakker R, Bouma J, van den Berg F. Response to noise from modern wind farms in the Netherlands. Journal of the Acoustical Society of America, 2009; 126: 634-43.

<sup>&</sup>lt;sup>20</sup> Leventhall, G. (with Pelmear, P., & Benton, S.), A Review Of Published Research On Low Frequency Noise And Its Effects, (2003)

Retrieved from http://westminsterresearch.wmin.ac.uk/4141/

<sup>&</sup>lt;sup>21</sup> DeGagne, D. C., & Lapka, S. D., "Incorporating Low Frequency Noise Legislation for the Energy Industry in Alberta, Canada", Journal of Low Frequency Noise, Vibration and Active Control, 27,105-120, (2008)<sup>22</sup> Schust, M., "Effects Of Low Frequency Noise Up To 100 Hz", Noise Health, 6, 73-85, (2004)

- <sup>23</sup> Howe Gastmeier Chapnik Limited, Low Frequency Noise and Infrasound Associated With Wind Turbine Generator Systems: A Literature Review, (2010, December 10)
- <sup>24</sup> Health Canada, Useful Information for Environmental Assessments, (2010), Published by authority of the Minister of Health.
- <sup>25</sup> Michaud, D. S., Keith, S. E., & McMurchy, D., "Noise Annoyance in Canada", Noise Health, 7, 39-47,
- <sup>26</sup> Health Canada's Wind Turbine Noise and Health Study Expert Committee Members, February, 2013,
- <sup>27</sup> Correspondence from the Honourable Rona Ambrose, June 30, 2009
- <sup>28</sup> Pedersen E, Persson KW. Perception and annoyance due to wind turbine noise–a dose response relationship. Journal of the Acoustical Society of America. 2004; 116: 3460-70.
- <sup>29</sup> Harry A. Wind turbines, noise and health. 2007, February. Retrieved from <a href="http://www.wind-">http://www.wind-</a>
- watch.org/documents/windturbines-noise-and-health/

  The property of the proper different living environments. Occupational and Environmental Medicine. 2007;64:480-86.
- <sup>31</sup> Phipps R, Amati M, McCoard S, Fisher R. Visual and noise effects reported by residents living close to Manawatu wind farms: Preliminary survey results. 2007. Retrieved from http://www.windwatch.org/documents/visual-and-noise-effects-reportedby-residents-living-close-to-manawatu-wind-farms-
- preliminarysurvey-results/
  <sup>32</sup> Pedersen E, Bakker R, Bouma J, van den Berg F. Response to noise from modern wind farms in the Netherlands. Journal of the Acoustical Society of America, 2009; 126: 634-43.
- <sup>33</sup> Pierpont N. Wind turbine syndrome: A report on a natural experiment. Santa Fe, NM: K-Selected Books.
- <sup>34</sup> Krogh C, Gillis L, Kouwen N, Aramini J. WindVOiCe, a self-reporting survey: Adverse health effects, industrial wind turbines, and the need for vigilance monitoring. Bulletin of Science Technology & Society. 2011: 31: 334-45.
- 35 Shepherd D, McBride D, Welch D, Dirks KN, Hill EM. Evaluating the impact of wind turbine noise on health-related quality of life. Noise Health. 2011;13:333-9.
- <sup>36</sup> Thorne B. The problems with noise numbers for wind farm noise assessment. Bulletin of Science, Technology & Society. 2011;31:262-90.
- <sup>37</sup> Rand R., Ambrose S, Krogh C. Wind turbine acoustic investigation: infrasound and low-frequency noisea case study, Bulletin of Science Technology & Society. 2012;32:128-41
- <sup>38</sup> Falmouth Health Department. Letter to Massachusetts Department of Public Health. June 11, 2012
- <sup>39</sup> Nissenbaum M, Aramini J, Hanning C. Effects of industrial wind turbine noise on sleep and health. Noise and Health. 2012;14:60:237-43.
- <sup>40</sup> Colby, W. D., Dobie, R., Leventhall, G., Lipscomb, D. M., McCunney, R. J., Seilo, M. T., & Søndergaard, B., Wind Turbine Sound and Health Effects: An Expert Panel Review, Washington, DC: American Wind Energy Association and Canadian Wind Energy Association. (2009) Retrieved from http://www.canwea.ca/pdf/talkwind/Wind\_Turbine\_Sound\_and\_Health\_Effects.pdf
- <sup>41</sup> Krogh C. Industrial wind turbine development and loss of social justice? Bulletin of Science Technology & Society. 2011;31:321-33.
- <sup>42</sup> Berglund, B., Lindvall, T., & Schwela, D. H., Guidelines for Community Noise, Geneva, Switzerland: World Health Organization, (1999)
- <sup>43</sup> Keith SE, Michaud DS, Bly SHP: A justification for using a 45 dBA sound Level Criterion For Wind
- 44 Keith SE, Michaud DS, Bly SHP: A proposal for evaluating the potential health effects of wind turbine noise for projects under the Canadian Environmental Assessment Act. Second International Meeting on Wind Turbine Noise, Lyon France September 20 -21 2007
- <sup>45</sup> Keith SE, Michaud DS, Bly SHP: A proposal for evaluating the potential health effects of wind turbine noise for projects under the Canadian Environmental Assessment Act. J Low Freq Noise V A 2008, 27:253-265.

<sup>46</sup> Howe Gastmeier Chapnik Limited. (2010, December 10). Low frequency noise and infrasound associated with wind turbine generator systems: A literature review (Rfp No. Oss-078696). Mississauga, Ontario, Canada: Ministry of the Environment.