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The Health Effects of Noise: NIMBYism, Greed, and Conspiracy Theories

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Robert V. Harrison, PhD, DSc



There is extensive “research” literature on the possible health effects of wind-turbine noise, but my aim here is not to review the science but rather to reveal some unnerving social and political aspects around this topic. This story is rife with bad science, fake news, and alternate facts exploited by those who do not want wind turbine farms established (and clearly do not value the green energy supply). In addition, as indicated in my title, there is NIMBYism (Not In My BackYard), often fueled by economic fears and a strong but misplaced belief that wind turbines cause serious health problems.

As we have come to increasingly experience (especially throughout the Trump era), false and sometimes absurd ideas can be spawned and amplified by popular and social media. In this way, unfounded claims of disease caused by wind turbines appear to have become facts that are eagerly accepted and used by those who object, hinder, and often prevent wind-turbine installations.

My experience with both the scientific facts and the politics related to wind-turbines stems from my involvement in an expert panel that carried out a systematic review titled: Understanding the

Evidence: Wind Turbine Noise. The study was organized by the Council of Canadian Academies and sponsored by the Canadian government. The full 150-page report can be downloaded.[1] I have written about this in previous editions of Canadian Audiologist.[2,3] and published a paper debunking ideas that turbine noise can cause vestibular problems.[4] In short, there is no scientific evidence that causally links wind-turbine noise to serious health effects. Only "annoyance" appears to be related to wind turbines and often not related uniquely to the noise but rather other factors such as visual esthetics and other psychogenic influences.

A critical aspect of our systematic review was an initial broad survey to identify any health issues reported to be associated with wind-turbine noise. Our survey (of over 300 articles) included scientific studies and "grey literature" including news articles, web pages, legal decisions, etc. We found suggestions for over 30 adverse health effects from this broad survey. So, out in the social media, popular literature, and newspapers, there were "reports" of wind-turbine noise-causing: cardiovascular disease, hypertension, diabetes, back and joint pain, myalgia, sleep disturbance, fatigue, headache, nausea, vertigo, stress, visual disturbance, tinnitus, hearing loss, anxiety, depression and nose bleed, etc. The list goes on, but I cannot omit one infamous claim made by a certain US President that "windmills" [*sic*] can cause cancer.

After this broad survey, our panel focused on the highest level of scientific evidence (peer-reviewed, randomized, controlled studies) to see if any of these numerous suggested health effects were founded. As mentioned above, only "annoyance" was clearly linked to wind-turbine noise. In addition, other high-quality scientific studies, scoping reviews, and meta-analyses have confirmed conclusions from our own systematic review.

So, the scientific finding that there are no adverse health problems from wind-turbines should be end of story and end of problem? Not so! In the real world where public administrators and politicians have to approve of wind-turbine developments, and where members of the public have rights and opinions, and where lawyers take sides with their "expert witnesses" we tend to leave the science behind. Everybody can believe in what they want to believe in. Serious looking people choose the alternative facts that suit the cause. Very few people can distinguish between suggestions in the grey literature that cites dozens of health issues, from the highest levels of evidence in scientific literature that confirms none of them. To compound the problem, there are well-organized wind-turbine protest groups that spread the fake news when and where required.

On numerous occasions I have been called upon to provide the real evidence regarding health effects of wind-turbines to local communities living near to proposed wind-turbine farms, or to the planning authorities. My main observations are as follows. Much of the protest against wind-turbines is from locals who worry about environmental issues, as well as the aesthetic degradation of their pastoral landscape. There are also fears about financial consequences of decreased property values. However, many of the arguments made are not related to these NIMBY factors, but rather to the health effects of wind-turbine noise. Perhaps it is because health issues are the most politically compelling. In any case, as a scientist it is always very disappointing to see how so many of our citizens cannot distinguish between real scientific evidence and "made up stuff". Some genuinely believe what they read from a Google search [5]. Others do understand the facts but choose to ignore them because they are, well, inconvenient.

To be topical, we have just experienced a pandemic in which scientific facts about COVID virus epidemiology and vaccination were well established. However large groups in society, because of

cultural, political or personal beliefs, chose to disbelieve or ignore the science. My take home message is that there is always a large gap between scientific knowledge and the practical, real world implementation of that knowledge.

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