

What's Our Ethical Responsibility?

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There are many possible interpretations of ethical responsibility as applied to the practice of consulting work or expert witness work in the fields of acoustics and vibration. I believe that our first responsibility, which overrides all other ethical responsibilities, lies with safeguarding the health and welfare of the community, whether this be local, national or international. Our second responsibility is to the client who is paying for our services, and our next level of responsibility is to the company for whom we work. Of course we also have a responsibility to respect our colleagues and our professional bodies even if they publish work that contradicts our own opinion. In a nutshell this means that we should keep any public discussion objective and make sure that this does not include any direct or implied personal denigration of anyone else including our colleagues.

In the case of expert witness work, our responsibility is to the court, not to the client paying us. And if we do not agree with the client's case, we should not act for them. This hierarchy of responsibility follows the guidelines laid out in codes of ethics of many professional bodies, including acoustical societies and engineering societies.

A considerable amount of acoustics consulting work involves conflict between two opposing sides, one of which is usually a corporation, while the other may be another corporation or more likely, an individual or community group. Sometimes, noise data are required by the court, and as innocuous as this may seem at first glance, it is sometimes the subject of unethical conduct. Such conduct takes the form of measurements being taken at inappropriate times or only selected measurement results finding their way into a report.

One example in the case of wind farms is using measured data to determine whether or not the wind farm noise is tonal in nature. If it is labelled as tonal, then an A-weighted penalty of 5 dB is applied to the allowed noise level in many development consents.

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The issue here is that there are often certain wind strengths and directions for which the wind farm noise is not tonal and others for which it does exhibit tonal characteristics. Sometimes wind farm developers request that measurements only be taken under the wind conditions that do not favour tonality showing up. Even worse, when some of the data show tonal characteristics, but most of it does not, the consultants can be asked to discard the unfavorable data.

Another example of the misuse of data is in the characterization of background noise levels, such as prior to a wind farm being established, as many development consents allow wind farm noise levels to exceed background A-weighted noise levels by 5 dB. Lack of care to prevent wind noise by using secondary wind shields on the microphone can result in measured noise levels being much higher than the actual noise levels, which in turn results in allowable wind farm noise levels being higher than they should be.

In some cases regulations encourage the misuse of data, such as the requirement to average daytime and night-time noise levels as a function of wind speed at the turbine hub to obtain the background noise that will be used to specify allowable wind farm noise levels. The fact that this entirely misrepresents the actual noise levels that exist at residences late at night, especially during times of high wind shear, is an example of the misuse of data resulting in excessive allowable noise levels, especially in quiet rural areas.

In providing technical opinions, it is important to use "best practice" and not to assume that allowable noise levels expressed in regulations will not cause a nuisance to some people in the community, especially where low-frequency noise and infrasound are concerned. There is a wide range of sensitivity to noise (especially low-frequency noise), just like there is a wide range of tolerance to other things, such as cigarette smoke, for example. So we need to be careful when we express opinions that a certain noise character or level is not a problem, even if our personal experience of listening

to such a noise would indicate such. We should also not judge that people complaining about the effects of such a noise on their ability to sleep and their health are imagining there is a problem when none exists. This is especially true for noise sources that result in a large number of complaints, such as wind farms in rural areas.

An example may be that we are commissioned to undertake a consulting job that requires the prediction of noise levels that will be produced by a wind farm development and the assessment of existing background noise levels prior to the development. In such a case, I think it reasonable that we ask ourselves questions such as:

1. If we base calculations on a standard such as ISO9613/2, how confident are we that the predicted noise levels will not be exceeded?
2. Have we taken into account the low frequency dominance of the noise at relatively large distances (between 2 and 5 km from the nearest turbine) under stable atmospheric conditions?
3. What is the effect of turbulent inflow caused by terrain and upstream turbines on the sound power levels provided by the turbine manufacturer?
4. Should we comment on the potential for the noise to be annoying, especially to rural communities that often experience background noise levels at night that are 20 dB or more below the allowable levels?

The answers to the above questions become obvious if we accept the primary premise of most codes of ethics – that is, we all have an ethical responsibility to ensure that we do not contribute in any way to harming the health and welfare of our communities. This includes individuals in these communities who may be in a minority in terms of being adversely affected by a noise source. Although the interpretation of this responsibility can be quite subjective, there are guidelines provided by many acoustical societies and engineering societies that we would do well to follow.

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