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Martti Warpenius
Chairman AAAC

September 18, 2013

Mr Warpenius:

I am stunned that someone who professes to be an expert in acoustics could state something so misleading as "People themselves generate infrasound through things like their own heartbeat, through breathing and these levels of infrasound can be substantially higher than an external noise source."

Stimulation of the ear occurs not directly by pressure (which is why deep sea divers can still hear) but by induced motions of the inner ear fluids, which in turn move sensory tissues and motion-sensitive cells.

What you fail to understand is that when low frequency and infrasound enters the ear via the stapes, it causes fluid movements throughout the entire ear between the stapes in the vestibule, through scala vestibuli and scala tympani to the compliant round window membrane at the base of scala tympani. It is these fluid movements that drive sensory tissue movements and cause stimulation.

In contrast, pressure fluctuations generated by the body, such as by heartbeat and respiration, enter the ear via the cochlear aqueduct, not through the stapes. The cochlear aqueduct enters the ear adjacent to the round window membrane in the very basal part of scala tympani, so the fluid flows are localized in this tiny region of the ear. As the rest of the ear is bounded by a bony shell which is not compliant, fluid flows in the rest of the ear are substantially lower so that displacements of sensory tissues are negligible. Infrasound generated by the body, because it enters through the aqueduct, therefore does not cause stimulation of the ear.

If you don't understand the anatomy of the ear or this brief explanation, please refer to our paper, Salt & Hullar, Hearing Research 2010; 268: 12; Figure 2.

Experimentally, we know that when infrasonic stimuli are applied to the ear acoustically, via the ear canal and stapes, they generate large electrical responses (Salt et al. J Acoust Soc Am. 2013 133:1561). Yet the sizeable pressures (measurable within the cochlea in mmHg) associated with heartbeat and respiration do not generate significant electrical responses.

I think the time has come when engineers who apparently know little about the physiology of the ear should not be making pseudo-authoritative statements about physiological and clinical aspects of low frequency and infrasound stimulation. Your comments not only fail in their stated goal to "clear up any confusion over the health impact of wind farms", they are simply false and imply that infrasound from external sources such as wind turbines has negligible consequences to people, when we know that is not true.

It is appalling that rather than trying to find the scientific basis and seek solutions to the problem of wind turbine infrasound, the Chairman of the AAAC is peddling misinformation in an attempt to misdirect those who trust their guidance.

In my view, your statements are so misleading they need to be retracted.

Sincerely,

A handwritten signature in blue ink, appearing to read "Alec N. Salt". The signature is fluid and cursive, with the first name "Alec" and last name "Salt" clearly distinguishable.

Alec N Salt
Professor of Otolaryngology