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Infrasound From Wind Turbines Could Be ‘A Huge Threat to the Entire Biodiversity’: Doctor

A German doctor raises the alarm over the impact of infrasound from wind turbines.



(Summit Art Creations/Shutterstock)

By [Maurice Forgeng](#)

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More than 70,000 wind turbines operate across the United States, and the U.S. government continues to approve offshore wind projects as part of its transition [toward clean energy](#).

When wind turbines rotate, however, they generate not only electricity but also infrasound.

For Dr. Ursula Bellut-Staeck, this development represents “a huge problem for all forms of organisms,” including humans. The medical doctor and scientific author has been studying the health effects of infrasound for several years. She has been looking into infrasound as a stressor on the cellular level since 2015 and published a [paper](#) in 2023 on how infrasound affects microcirculation and endothelial cells.

Inaudible but Impactful

Infrasound is defined as a sound wave with a frequency of less than 20 hertz (Hz). The lower the frequency of the sound, the greater its wavelength and the harder it is to shield from it. Infrasound can penetrate walls, people, and animals.

“With ever larger wind turbines, the frequencies are getting lower and lower. This makes infrasound more problematic and dangerous,” Dr. Bellut-Staeck told The Epoch Times.

Today’s wind turbines [reach frequencies](#) as low as 0.25 Hz. The wavelength of this frequency is just under 0.86 miles.

Infrasound has another special feature. Humans cannot usually hear frequencies below 16 Hz, which marks the so-called lower hearing threshold. In other words, we cannot hear many of the sounds emitted by wind turbines. However, we may feel them in our bodies as humming or rumbling, as with a loudspeaker. The lower the frequency, the higher the sound pressure level (i.e., the volume) must be to feel or hear it.

Nevertheless, the mechanical forces emanating from the inaudible sound frequencies can have an effect on the cell and membrane structures, Dr. Bellut-Staeck said.

Transmitted via the Air and Ground

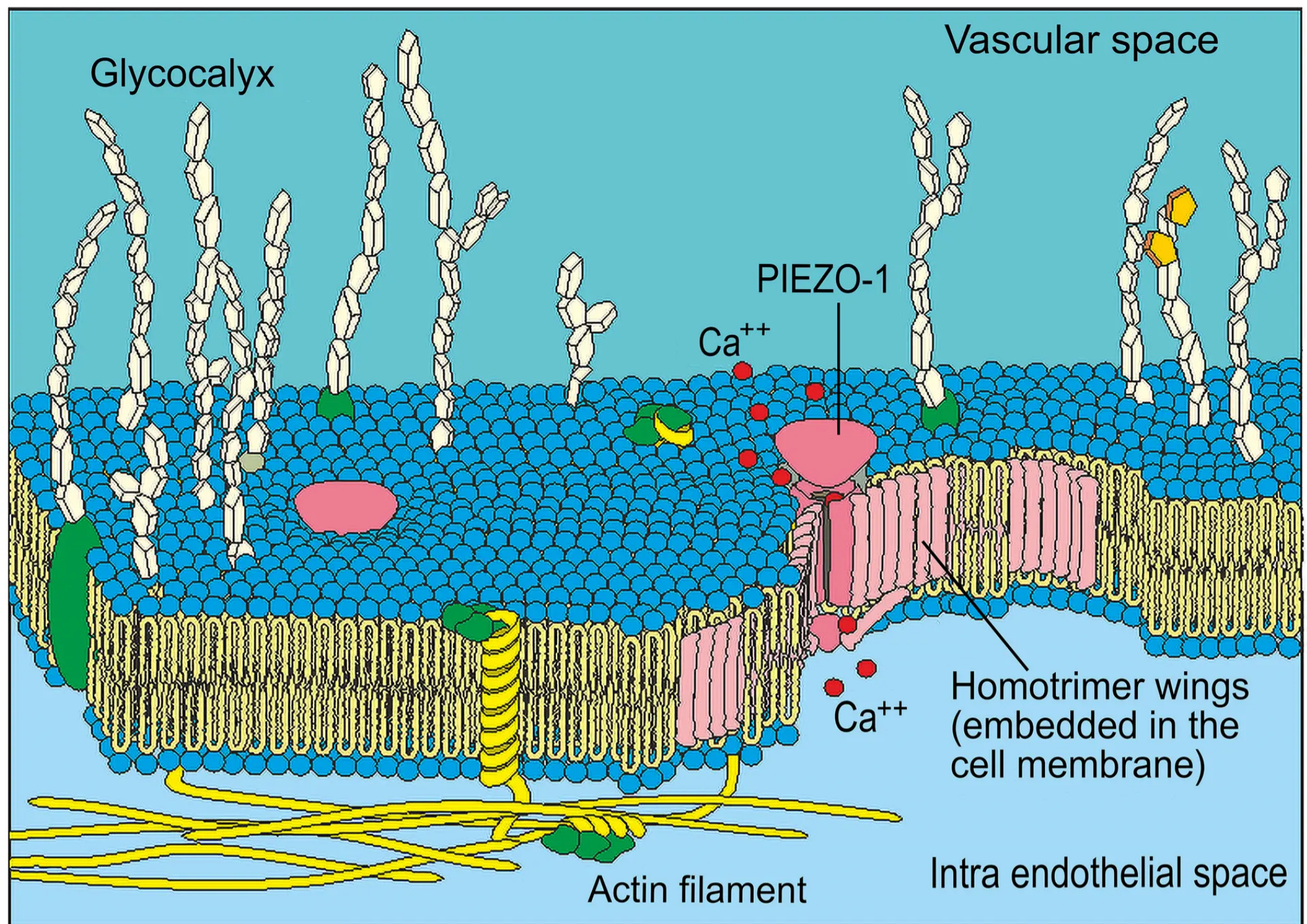
Wind turbines [generate infrasound](#) when the rotor blade brushes past the mast. The rotor blade pushes large air masses in front of it, which is then interrupted at the mast.

Infrasound is then transmitted not only through the air but also through the ground via the tower and can penetrate houses. Buildings, therefore, offer no protection. “On the contrary: Airborne and ground-borne infrasound can add up considerably indoors,” Dr. Bellut-Staeck said.

Impact on Endothelial Cells

Infrasound could also affect microcirculation, the blood circulation of the fine capillary network where oxygen and nutrients enter the surrounding tissues.

More precisely, it’s the endothelial cells located on the inner wall of the capillaries that react to infrasound, Dr. Ursula Bellut-Staeck said. She’s been studying microcirculation and endothelial cells since 2004. In addition to transporting proteins, these cells have many vital functions, such as inhibiting inflammation and controlling blood pressure. In a [rat study](#) examining the effects of infrasound, researchers noticed endothelial swelling and outer cell membrane damage within three hours of exposure to infrasound with a frequency of 8 Hz.



The surface of an endothelial cell. (Courtesy of Dr. Ursula Bellut-Staeck)

“Since around 2015, it has been noticed that people exposed to infrasound and vibration from technical emitters have shown symptoms that correspond to microcirculatory disorders,” Dr. Bellut-Staeck said. This effect was particularly noticeable after smaller wind turbines were replaced by larger ones.

Reported [adverse effects of industrial wind turbines](#) include weakness, dizziness, headaches, concentration and memory issues, ear pressure, cardiac arrhythmia, and sleep disorders, according to research cited in *Canadian Family Physician*.

Numerous animals have also reacted to wind turbines. It has been observed that they leave the vicinity of wind turbines. One study [published in Scientific Reports](#) showed that many bird and mammal species avoided wind farms and the surrounding areas, affecting distribution and migration patterns. Place-bound animals such as horses, cows, and pets are said to have [shown changes in behavior](#), including signs of stress.

“The symptoms in animals cannot be [attributed to] a nocebo effect,” Dr. Bellut-Staeck noted, as official authorities sometimes suggest. In contrast to the placebo effect, the nocebo effect describes a negative health effect from expectations of negative consequences.

Dr. Bellut-Staeck pointed out that other technical systems also emit infrasound and could cause major problems. For example, in or near residences, this applies to heat pumps, biogas plants, and gas turbines. However, she expects large wind turbines to have the most far-reaching consequences for the environment and biodiversity—

precisely because of their increasing number and size.

“Such chronic and impulsive low-frequency stressors can never be compared to natural infrasound pollution [like high surf and strong winds],” she said.

Are Whale Deaths Connected?

In 2023, official data revealed an increase in the [stranding and death of whales](#) along the U.S. East Coast. There was a temporal and geographical connection between this excess mortality and the geological surveying conducted for the expansion of offshore wind power. As a result, 30 New Jersey mayors signed a petition asking congressmen to help pause offshore wind power expansion activities until a full investigation could be conducted. The National Oceanic and Atmospheric Administration [has stated](#), “There are no known links between large whale deaths and ongoing offshore wind activities.”

But Dr. Bellut-Staeck remains concerned by the low-frequency sound and vibrations of ship noise and other sounds. In the ocean, sound travels at 0.91 miles per second—four times faster than in the air. The depth of the oceans, therefore, offers no protection against sound.

“It doesn’t just affect orientation, but also the regulation of vital bodily functions,” Dr. Bellut-Staeck said. “The consequences for the animals here are also lack of energy, chronic inflammation, disruption of reproduction, excess mortality, and population decline.”

Vibrational Stress

As all organisms react to infrasound, Dr. Bellut-Staeck emphasized that “we may have a huge, previously unrecognized threat to the entire biodiversity.”

Dr. Bellut-Staeck, who does her research in Germany, where wind power is the largest contributor to the power grid, proposes that deep sound and vibration can act as a vibrational stress factor on endothelial cells. As many vital functions require intact endothelial cells, endothelial damage can have serious consequences, including contributing to [vascular aging](#) and [atherosclerosis](#).

The German Federal Environment Agency, however, told The Epoch Times that it has not found any evidence that infrasound from wind turbines causes adverse health effects and that “how infrasound emitted by wind turbines affects endothelial cells has not yet been scientifically proven.”

International Studies Show Harmful Effects

Dr. Bellut-Staeck said there are currently no studies to clearly illustrate or [prove the risk of infrasound](#), as most studies focus on acoustic, or audible, sound.

However, initial studies on the effects of infrasound indicate possible serious health problems. One study published in [Environmental Disease](#) concluded there was a high probability that people living near

industrial wind turbines would experience harmful health effects due to anxiety, stress, and loss of sleep resulting from exposure to infrasound and other emissions. A [German study](#) also identified the toxic effects of infrasound exposure at a cellular level. Another [study, published in PLoS ONE](#), documented brain activity changes following exposure to infrasound stimulation.

These studies emphasize the need for further research and a better understanding of the impacts of infrasound.

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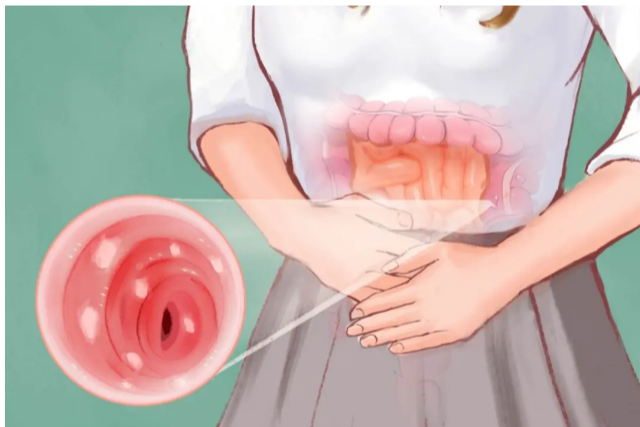
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