

To:  
Director Dominique Gombert  
Physical Agent Risk Evaluation Group  
ANSES – French Agency for Food, Environmental and Occupational Health & Safety,

**Sent via email:**

**To:** aurelie.niaudet@anses.fr      **CC:** rioujeanpierre@gmail.com

Lisbon, 31 March 2015

RE: *Biological response to occupational or environmental exposure to infrasound and low frequency noise – the specific case of Industrial Wind Turbines.*

Dear Sir,

As a lead researcher into the biological effects of infrasound and low frequency noise exposure (ILFN), and upon the request of Monsieur Jean Pierre Riou, I am taking the liberty of addressing this letter to you regarding the health effects of infrasound & low frequency noise (ILFN) exposure.

ILFN-induced pathology in humans and animals has been systematically studied since the 1940's, with a hiatus in the 1960's during the Soviet and U.S. space race. The outcome of ILFN exposure on human health, however, was not exclusively assessed through subjective parameters, such as *annoyance*, for example. Instead, physiological responses and pathological changes to organs and tissues were also studied and documented.

Subsequent to the studies of numerous other authors worldwide, ILFN-induced pathology was brought to light by our research group in the early 1980's, based on objective diagnostic tests, such as echocardiograms, lung function evaluations, and brain potentials registries; on electron microscopy studies of ultra-structural aspects of ILFN-damaged tissue; and on the systematic study of symptomatic complaints made by ILFN-exposed individuals. The existence of this documented pathology and its underlying research has been extensively published in peer-review journals and Scientific Conferences, mostly in Portuguese until 1999, and in English since then.

It is not my place to discuss the economic, political or legal background against which your Agency's decisions, and this letter are being produced, although the context of a worldwide shortage of electrical energy duly acknowledged. I represent a group of scientists who procures knowledge for the sake of knowledge, particularly when it advances the wellbeing of societies through the prevention or control of diseases. Industrial Wind Turbines (IWT), for example, is but one of many

problematic sources of ILFN that we have investigated over the past 35 years in both *occupational* and *residential* ILFN-rich environments.

Several scientific societies have recognized our work with the following awards:

- 1984** Ricardo Jorge National Institute for Public Health (Portugal) – *Vibration disease: Auditory brain potentials;*
- 1996** Ross McFarland Award, Aerospace Medical Association (USA) – *Morphofunctional study of rat pleural mesothelial cells exposed to LFN;*
- 1998** Portuguese Society for Electron Microscopy and Cellular Biology - *Morphological Changes of Tracheal Epithelia in Wistar Rats Exposed to Low Frequency Noise;*
- 2002** Portuguese Society for the Medical Sciences – National Occupational Medicine Award – *The respiratory system in noise exposed workers;*
- 2002** Ricardo Jorge National Institute for Public Health (Portugal) - *Sister Chromatid Exchanges in Rats Exposed to Low Frequency Noise & Whole-Body Vibration;*
- 2004** Portuguese Lung Society - Boehringer Ingelheim Scientific Award: *Involvement of central airways in vibroacoustic disease patients;*
- 2006** National Institute of Safety and Health in the Workplace (Portugal) – *Diagnosis of vibroacoustic disease for forensic purposes.*

It is my hope that the titles of our awarded work will clarify for you the foundational knowledge on which we base our scientific papers and recommendations. To date, none of these studies has been disputed with opposing scientific evidence. This type of medical and biological evidence requires teams of individuals specialized in bio-clinical medicine, such as our own. Evaluating adverse health effects among ILFN-exposed populations based on highly subjective, self-reported data *is not* a valid scientific procedure. Clinical diagnosis and investigation of a disease is never based solely on subjective evaluations (such as annoyance, for example).

I understand that your Agency also deals with occupational safety and health. There are numerous workplaces where the effects of ILFN exposure (on an *occupational* schedule) can be examined. In fact, our studies began within occupational environments within the military and commercial aeronautical industry. Only in 2001 did we begin to acoustically and clinically document residential ILFN exposures. By that time, the clinical protocol developed for ILFN-exposed workers was applied to families living in ILFN-rich homes. Residential IFLN exposure *does not* obey work-shift and weekend schedules; residential ILFN exposure is potentially continuous or, at best, lacking in sufficient recovery periods (absence of excessive ILFN levels). Our observations and documented published work attest to *an accelerated onset of ILFN-induced pathology* among families living in ILFN-rich homes, when compared to workers exposed to occupational ILFN.

As you may be well aware, ILFN is a physical agent of disease that is not recognized as such, even though infrasound (<20 Hz) is internationally classified as *non-ionizing radiation*. In fact, the archaic notion presuming “What you can’t hear won’t hurt you,” is still the basis for occupational hearing protection equipment and programs, and for environmental noise legislation. This is an erroneous and outdated concept (not a scientific truth), but that still prevails despite being repeatedly confronted with the scientific evidence proving it wrong. As a consequence, however, ILFN is not

properly assessed during routine noise assessment procedures. International legislation regarding noise measurements is based on this erroneous assumption, and excludes the very frequencies known to damage health and cause disease.

I kindly and strongly urge and recommend that your Agency a) promote scientifically-valid clinical studies of the adverse health effects of ILFN exposure, particularly, residential ILFN exposure, and b) review all *bona fide clinical data* on ILFN-induced pathology, before establishing safe distances between IWT and residential dwellings.

I am, of course, available for any and all additional clarifications or explanations that you may deem necessary.

Sincerely,  
Mariana Alves-Pereira, Ph.D.

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