

Industrial Wind Turbines, Infrasound and Vibro-Acoustic Disease (VAD)

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The **Center for Human Performance** is a civilian, non-profit organization dedicated to research in vibro-acoustic disease. CPH was founded in 1992 and has been the organization which coordinates all the different teams that work on vibro-acoustic disease research, and that include (in Portugal) the cardiology and pulmonary departments of the Cascais Hospital, the neurophysiology department of the National Institute of Cancer, the department of human genetics of the National Institute of Public Health, the department of speech pathology of the School of Health Sciences of the Polytechnical Institute of Setúbal, among several others over the past 25 years.

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Excessive exposure to infrasound and low frequency noise (ILFN, defined as all acoustical phenomena occurring at or below the frequency bands of 500 Hz) can cause vibro-acoustic disease (VAD).¹

Research into VAD has been ongoing since 1980, conducted by a multidisciplinary team of scientists led by pathologist Nuno Castelo Branco, MD.

In March 2007, for the first time, the Portuguese *National Center for Occupational Diseases* gave 100% professional disability to a 40-year-old flight attendant who had been diagnosed with VAD since 2001. Two other VAD patients also have been given a similar disability status.

Initially, only ILFN-rich occupational environments were investigated. However, over the past several years, many individuals and their families have approached our team because of the ILFN contaminant in their homes. The sources of residential ILFN vary from industrial complexes, to large volume highways, to public transportation systems, etc.

In a case study published in *Proceedings of Internoise 2004* (an annual scientific meeting dedicated to all aspects of acoustics), one of the first documented cases of environmental VAD was reported in a family of four, exposed to the ILFN produced by a nearby port grain terminal.²

Over the past three years, several families have contacted this team complaining of noise caused by the proximity of industrial wind turbines (windmills). However, only within this past month (April 2007) has this team obtained detailed acoustical measurements within a home surrounded by four recently installed industrial windmills.

This acoustical data was essential in order to compare in-home, windmill-produced acoustical environments with the residential, ILFN-rich environments that are known to be conducive to VAD.

The levels of ILFN inside the windmill-surrounded home are larger than those obtained in the home contaminated by the port grain terminal.

The scientific report on this will be formally presented at *Internoise 2007*, to be held on 28-31 August in Istanbul, Turkey.³

These results irrefutably demonstrate that wind turbines in the proximity of residential areas produce acoustical environments that can lead to the development of VAD in nearby home-dwellers.

In order to protect Public Health, ILFN-producing devices must not be placed in locations that will contaminate residential areas with this agent of disease.

¹ Castelo Branco NAA, Alves-Pereira M. (2004) Vibroacoustic disease. *Noise & Health* 2004; 6(23): 3-20.

² Castelo Branco NAA, Araujo A., Joanaz de Melo J, Alves-Pereira M. (2004) Vibroacoustic disease in a 10-year-old male. *Proc. Internoise 2004*, Prague, Czech Republic, August 22-25, 2004: No. 634 (7 pages).

³ www.internoise2007.org.tr