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“Cutting through the Spin”  
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www.waubrafoundation.com.au
“Cutting through the Spin”

• Do wind turbines cause adverse health effects? What are the mechanisms? Out to what distance?
• What is the existing evidence?
  – Peer reviewed and published in journals, based on data rather than “reviews”
  – Peer reviewed
• What is the wind industry (and its many supporters and paid experts) saying?
• How can we move forward?
Do Wind turbines cause Adverse Health Effects?

• YES!! Reported by clinicians and residents (including turbine “hosts”), workers and visitors around the world

• Clear patterns of exposure to operating wind turbines leading to a characteristic range of health problems, variably expressed depending on individual susceptibility

• Not everyone is affected, and onset of symptoms varies

• If affected, cumulative exposure worsens symptoms. Always improve with cessation.
Do Wind turbines cause Adverse Health Effects?

• First reported by “front line” clinicians – Rural physicians
  – Dr Amanda Harry (UK) 2003
  – Dr David Iser, Toora, Victoria, Australian 2004
  – Dr Nina Pierpont, US Paediatrician 2009

• Others now investigating/reporting include:
  – Professor Robert McMurtry, Ontario 2010
  – Dr Chris Hanning, Sleep Physician, UK
  – Dr Mauri Johansson, Danish Occupational Physician
  – Dr Eckhardt Kuck, German Oral Surgeon
What are the mechanisms?

- KNOWN to cause harm to health from other sources
  - Low Frequency noise (20 – 200Hz)
  - Infrasound (0 – 20 Hz)
- Other possible mechanisms suggested by researchers:
  - Ground borne (seismic) vibrations
  - Rapid changes in barometric pressure
  - Electromagnetic fields
Known mechanisms - LFN

- Leventhall, 2003 literature review for UK’s DEFRA
  - LFN exposure caused range of symptoms identical to “wind turbine syndrome” in a case control study – source of LFN was compressors
  - LFN also reported to cause a PHYSIOLOGICAL stress response (eg in sleeping children exposed to truck LFN – elevated cortisol
  - People appear to become “sensitised”
  - Symptoms worsen with ongoing exposure
  - Denial of symptoms and lack of understanding by clinicians results in increased PSYCHOLOGICAL stress
Known mechanisms - Infrasound

• No data on long term human exposure in the public domain, (but used acutely as a “non-lethal weapon”)

• Short term exposure (I hour) in young fit adults resulted in elevated blood pressure, nausea, ear pressure,

• Chronic exposure in rats (1 study)
  – Oxidative stress mechanism (rats fed antioxidants showed less damage)
  – Focal organ damage (eg liver, brain, kidneys, testes, heart muscle)

• Adrenaline and Cortisol release measured in animal gut
Infrasound and low frequency noise from wind turbines is being measured inside the homes and workplaces of sick people by the following acousticians (some have themselves become sick):

- Mr Rick James, USA
- Mr Rob Rand, USA
- Mr Steven Ambrose, USA
- Mr Steven Cooper, Australia
- Dr Bob Thorne, Australia
- Mr Les Huson, Australia
- Professor Colin Hansen, Dr Con Doolan, Adelaide University
Over what distances are adverse health effects reported?

- Characteristic symptoms of “body vibrations” and the “waking repeatedly at night in a panicked state” out to 10km from Waterloo wind development in South Australia (VESTAS V90 wind turbines, rated at 3MW – size matters).
- Frenchman severely affected after 3 years of exposure at 11.5km, but 2MW turbines at 4,000 ft altitude. Does altitude affect sound energy transmission?? (wind turbine infrasound measured at Hubert’s home).
- Other reports of “sensitised” people affected out to 35km and more (US, Wales, Australia - “the HUM”).
Distance Effect of Wake Turbulence
Peer reviewed published DATA

Wind turbine Health specific Research Data

• Dr Daniel Shepherd “Noise & Health”
  – Confirmed sleep disturbance and adverse impact on health related quality of life in cross sectional study,

• Dr Michael Nissenbaum (publication in Oct 12)
  – Data described beginnings of a dose response curve

• Krogh, et al WindVOICE survey Ontario confirmed Dr Amanda Harry’s findings from UK
Peer reviewed published DATA

- Moller & Pedersen 2011 (Size Matters – larger turbines emit more proportional LFN)
- Professor Alec Salt – physiologist “inner ear reacts very differently to infrasound where there is very low background noise (eg quiet rural environments)” and at 60dBG will provoke a vestibular response and the “alerting mechanism” or “fight flight response” (levels of 60dBG are commonly being measured)
Peer Reviewed Published Data

• “Vibro acoustic disease” with prolonged LFN exposure eg in aviation workers, now being identified in German residents exposed to wind turbines long term (Alves Pereira, and Chao)
  – Pericardial thickening
  – Mitral and tricuspid valve abnormalities
  – Thickened wall of blood vessels
  – Dramatic increase in late onset epilepsy
Summary of current hypotheses

• Acute responses
  – activation of vestibular dysfunction via inner ear
  – Headache symptoms possibly LFN via eyes, or EMF

• Chronic response
  – Repetitive physiological stress
  – Chronic cumulative severe sleep deprivation
  – Psychological stress because of lack of response of responsible authorities, and hostile community

• Long term tissue damage (Vibroacoustic disease)
What do the Wind Developers Say?

• It varies!! **Privately** employees from Origin, Suzlon have admitted they know people get sick

• Some categorically deny any health problems anywhere (Infigen, in Senate testimony)

• Some admit some people get “stressed” and infer or openly state this is because of “scaremongering” (Acciona in Senate testimony).

• Professor Wittert, paid expert for Acciona in the Paltridge case, admitted people were “sick” and “stressed” but blamed scaremongering
What is the evidence for “Scaremongering” causing the symptoms at existing wind projects?

- First reports from medical doctors:
  - 2003 Dr Amanda Harry, UK (Rural GP)
  - 2004 Dr David Iser, Toora, Victoria (Rural GP)
  - 2009 Dr Nina Pierpont, USA (Paediatrician)

- First reports by Waubra residents in Victoria to media and health authorities were in 2009

- I first spoke out publicly in July 2010
What do Wind developers and others eg SA EPA say about Infrasound?

• “there is no infrasound at a well maintained wind farm” (SA EPA guidelines) BUT

• Infrasound measured and reported by NASA in 1989 at “upwind” turbines in Hawaii

• Dr Frits Van Den Berg reported it in 2004

• Since measured at multiple developments in Australia and the US by James, Rand, Ambrose, Cooper, Huson, & Thorne
How can we move forward?

- RESEARCH – multidisciplinary, done by those with no vested interests in the outcome
- LEGAL – cases are currently underway in a number of different parts of the world (especially in Ontario and Australia)
July 2011 Judgment in Canada

• This case has successfully shown that the debate should not be simplified to one about whether wind turbines can cause harm to humans. The evidence presented to the Tribunal demonstrates that they can, if facilities are placed too close to residents. The debate has now evolved to one of degree." (p. 207) (Emphasis added)[i]

• Environmental Review Tribunal, Case Nos.: 10-121/10-122 Erickson v. Director, Ministry of the Environment, Dated this 18th day of July, 2011 by Jerry V. DeMarco, Panel Chair and Paul Muldoon, Vice-Chair,

• http://www.ert.gov.on.ca/english/decisions/index.htm
Outcome - Home Abandonment