



Symroc Apr 24, 2024 2 min read

Symroc identified infrasound in a Albertan home that could impact the health of residents

Infrasound and low frequency noise and its effect on human health has attracted many researchers. Residential buildings, hospitals and retirement homes near construction sites and infrastructures such as airports, high speed railways, wind turbines are under the risk of long term exposure.

Each year, medical conferences focusing on “Human Responses to Vibration” (HRV) are held throughout the world. The medical community usually splits vibration studies into two fields: Whole Body Vibration (WBV) and Hand-Arm Vibration (HAV). Diseases or medical conditions caused by long-term vibration are termed Vibroacoustic Disease (VAB).

Related Reading: [Proceedings of the First American Conference on Human Vibration](#)

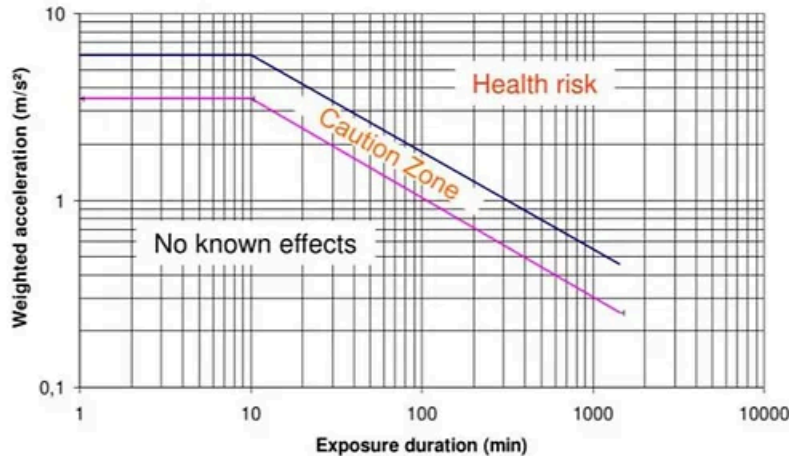
Some illness are found to be related to Whole Body Vibrations:

- Abnormal production of collagen & elastin
- Absence of inflammatory response
- Respiratory conditions– Immune disorders
- Genotoxic effects
- Neurological disturbances
- Cardiovascular disease
- Pericardial thickening ... usually means concomitant thickening of cardiac valves and of coronary artery walls, hence the risk for ischemic heart disease (Alves-Pereira 2011)

Whole-Body Vibration Standard ISO 2631-1

Health Guidance Zones:

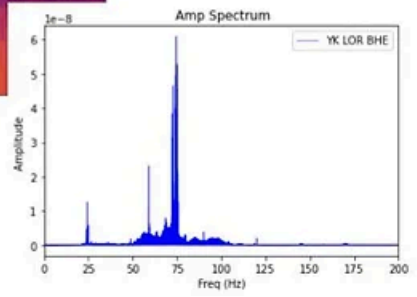
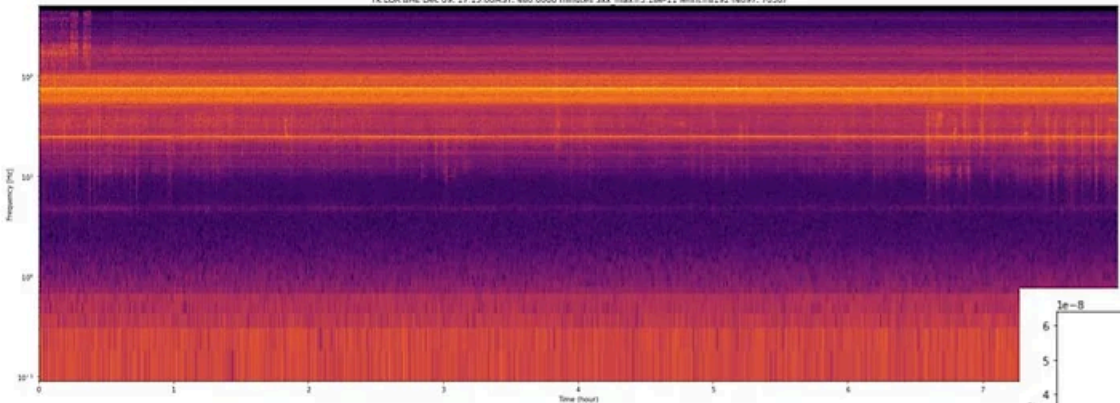
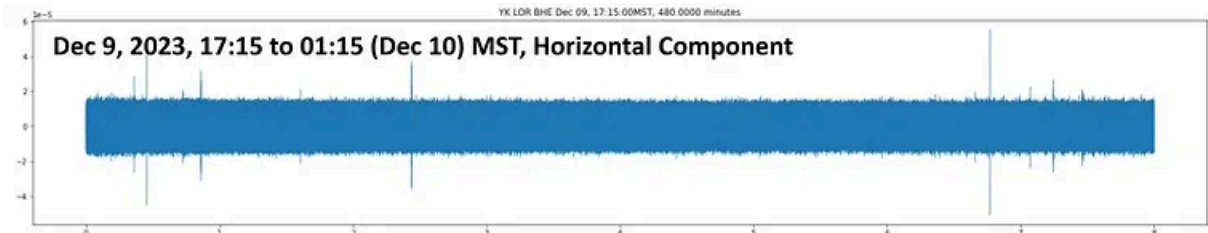
- There are not sufficient data to establish a quantitative relationship between vibration exposure and health risk
- The following health guidance zone diagram can be used as a rough orientation:



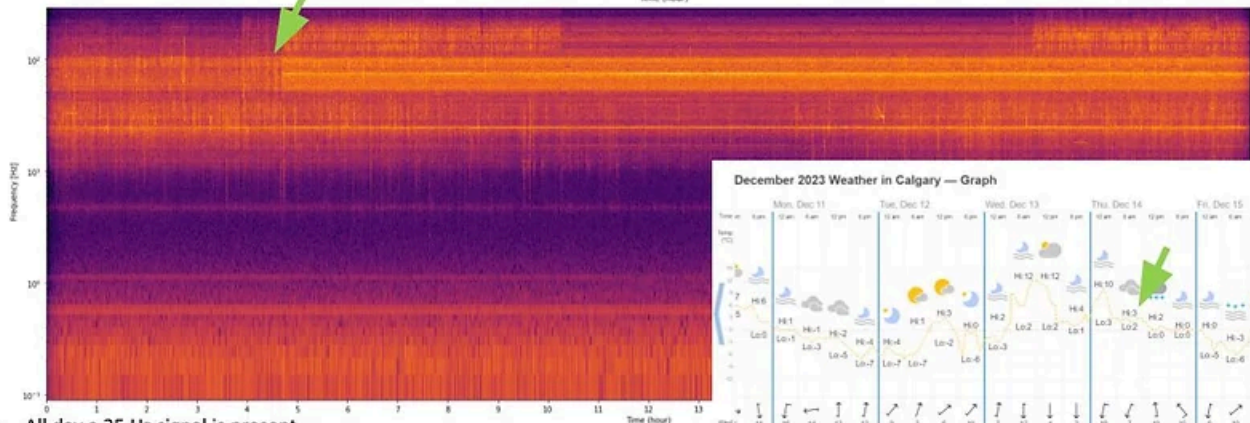
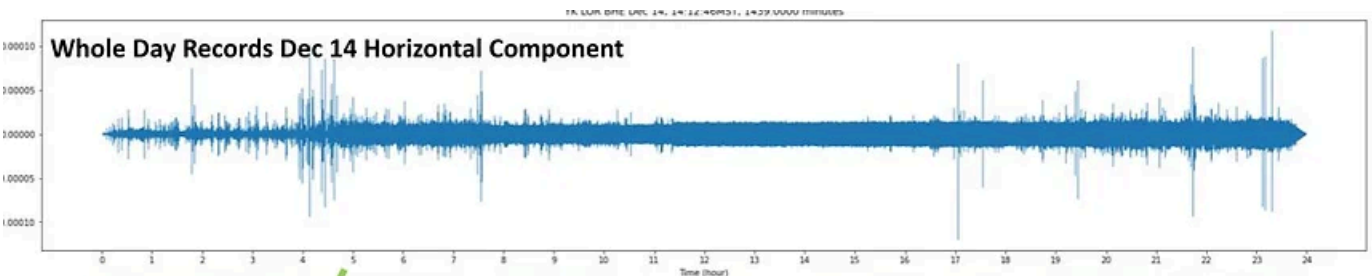
Metra Mess- und Frequenztechnik Radebeul / Germany www.MMF.de



Symroc has recently helped an Albertan living near a major traffic intersection investigate any potential harmful vibrations affecting their home. Our client is suffering several serious conditions that could be related to low-frequency vibrations or infrasound. It is also speculated that the vibrations are being generated close to the residence. To test these ideas, a three-component weak motion sensor was installed at her residence and recorded data for several weeks in December 2023.

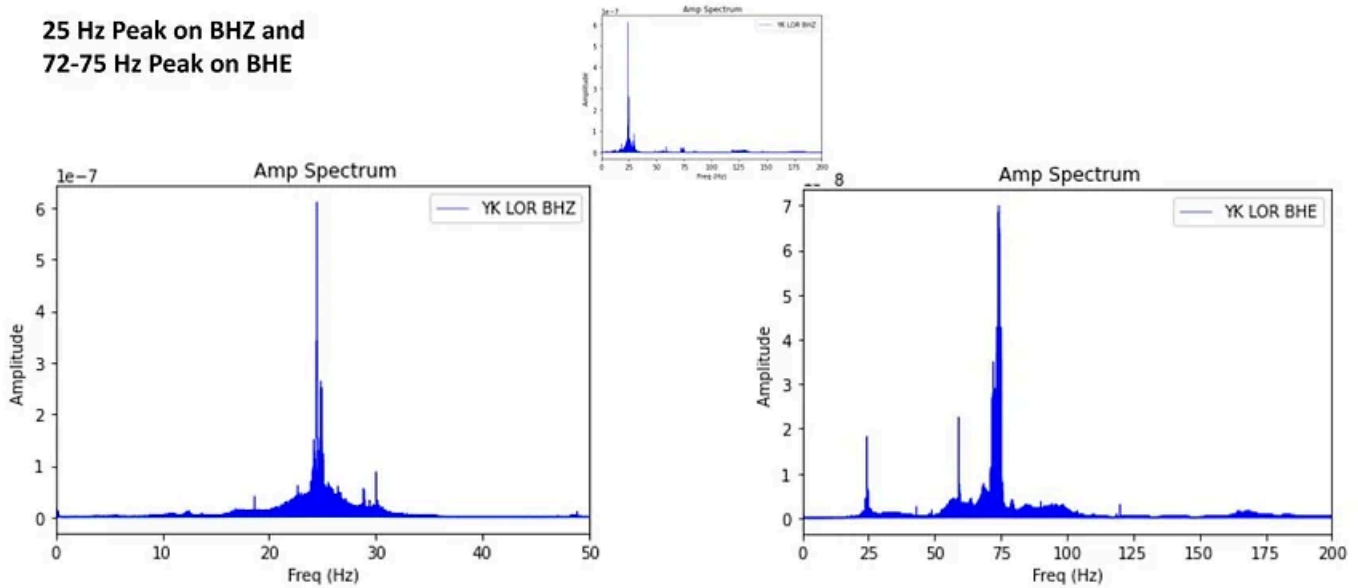


- 25 Hz present
- Large 75 Hz signal from 11:30 am MST and continues until record end; shows as a double spike (two motors?)
- Strong 60 Hz spike present



- All day a 25 Hz signal is present
- 75 Hz started again at about 7:00 pm
- The suspicion is that a heating fan is causing the 75 Hz, starting with the cooler weather as evening approaches
- There is also signal ~ 120 to 200 Hz until starting back-up at ~6:30 pm and stopping close to midnight; starting again in the morning

**25 Hz Peak on BHZ and
72-75 Hz Peak on BHE**



- These are probably the most important
- We also see a sharp 60 Hz electrical interference peak
- The 25 Hz vibration produces a very strong peak (this corresponds to 1500 rpm) on the spectral amplitude display
- 75 Hz is stronger on the horizontal component (4500 rpm)

After 24/7 vibration monitoring on the residential property, Symroc’s sensor successfully identified several dominant infrasound signals. This information is a powerful tool for our client to identify the source of potential hazards (or work as evidence for the absence of it) by correlating the time and ruling out factors such as household electric motors.