

**BAD VIBRATIONS:
THE HEALTH HAZARDS OF GEOTHERMAL NOISE**

by

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The sounds of geothermal drilling and operations create more than nuisance noise for those unfortunate enough to live near these facilities. Low frequency noise, or LFN, is also produced, and much of this is below the human threshold for hearing, although some people can feel the vibration.

This low frequency noise is the most harmful to human health and the environment.

LFN is considered less than 500 Hz, and is most harmful below 20 Hz, which is called infrasound and is lower than the human ear can hear. But this vibrational energy can still harm the body.

Depending on its intensity and duration, this vibrational energy can cause a condition called **Vibro-Acoustic Disease**, or VAD. VAD is a body-wide ailment, common for people exposed to industrial noise, including military personnel, pilots, flight attendants, and anyone else exposed for long periods of time to LFN.

The low frequency vibrations cause the tissues in the body to thicken, causing changes to the heart, lungs, blood vessels, and brain. The vibration also cleaves DNA resulting in mutations and cancer.

People living near drilling rigs on the Mainland suffer from VAD as a result of their exposure to the noise. Animals living near these rigs also suffer health problems.

VAD can be divided into 3 stages, based on length of time of exposure to the low frequency noise.

Stage I is mild and occurs after 1-4 years of exposure. It causes slight mood swings, indigestion and heartburn, mouth/throat infections, and bronchitis.

Stage II is moderate and occurs after 4-10 years of exposure. It causes chest pain, definite mood swings, back pain, fatigue, fungal, viral and parasitic skin infections, inflammation of stomach lining, pain on urination and blood in urine, conjunctivitis, and allergies.

Stage III is severe and occurs with over 10 years of exposure to LFN. It causes psychiatric disturbances, hemorrhages of nasal, digestive and conjunctive mucosa, nose bleeds, varicose veins and hemorrhoids, duodenal ulcers, spastic colitis, decrease in visual acuity, headaches, severe joint pain, intense muscular pain, and neurological disturbances.

It should be no surprise that low frequency noise is used by the military as a weapon.

One of the problems with LFN is that **LFN travels farther than higher frequencies**. Depending on conditions, it can travel many miles from the source. People can be affected by these vibrations without realizing it. They may feel nervous, depressed, or agitated and not know why. They may develop breathing problems and a cough without realizing it is caused by some energy plant miles

away.

In addition, any noxious gas emissions from geothermal operation, such as hydrogen sulfide, may cause more trouble in people exposed to LFN, since LFN damaged lungs are impaired in their ability to cleanse and heal.

And it's not just humans who are affected. Animals pick up the vibrations, too, which can drive them away, if they can get away, and interfere with their reproduction. Nesting birds are known to be disturbed by LFN. Endangered species in critical habitat, however, may not be able to get away from the noise and vibration, making LFN a serious threat to their survival.

Unfortunately, **current measurements of noise pollution use sound meters that ignore these low frequencies.** Low frequency noise pollution goes unmeasured, unmentioned, and unmitigated by current geothermal plant designs in Hawaii. However, there are drilling noise mitigation companies which specialize in LFN measurement and abatement which are used by geothermal plants elsewhere.

Bottom Line: Geothermal energy production creates low frequency noise pollution. Exposure to LFN can cause disease and death. These LFN are not currently recognized, measured or considered by government regulators and public health officials. Utility companies that cause this pollution do not measure for it. Plans to expand these technologies and their noisy footprint pose a public health threat, and may also threaten wildlife and degrade ecosystems, including endangered species and their critical habitat.

Here is a quote from the world's leading expert on LFN and VAD, Dr. Mariana Alves-Pereira, University of Portugal (personal communication):

“The sleep environment is of the utmost importance. People who sleep in "low-level" LFN-contaminated homes see a rapid progression of symptoms. Please note that people who do not have LFN-infested homes, but who work in LFN environments, also register sleep disturbances. *The importance of recovery times is absolutely crucial.* People who work in LFN and are then away from it outside work hours develop LFN-induced pathology at a slower rate than those who get no respite from this agent of disease.

“Our advice if you have a LFN-infested home: **LEAVE IMMEDIATELY!** It is possible to continue to fight against the causes of the LFN in the home, but not while living in it! Simply because, as time goes on, dwellers of such a home will get progressively ill, and will lose the ability (and even the will) to fight.

“I cannot stress this enough. If you know people who are complaining of LFN in their homes, please urge them to leave, at the very least, leave for a few hours a day, or better still, be there in the day but *do not sleep* in that house. Look at it this way: if people were told that there was a poison contaminating their homes, would they live in them? Although you cannot see nor smell LFN, and sometimes you cannot even hear it, if it is infesting the home 24/7, it becomes a most dangerous and fast debilitating agent of disease. It is not a defeat to leave the LFN-contaminated home. It is a smart thing to do if one wishes to put up a fight. Remaining in the home will annihilate all desire and capacity to fight the cause of in-home LFN, because one will get increasingly sick and debilitated.”

For more information, contact the Institute for the Study of Culturogenic Disease at 808-935-5563.