SUPRAHARMONICS: An Unknown Cause of Human Disease States

By Paul Harding

What are supraharmonics?

While the word supraharmonics has been used in the fields of computer science and electrical engineering since 2013, the term has been unknown to the general public. The aim of this article is to provide a definition of the term, elucidate where supraharmonics are found in our environment, and explain how it ties into the chronic disease conditions of modern man.

The term "supraharmonics" was first introduced by Alex McEachern at an Institute of Electrical and Electronics Engineers (IEEE) Power & Energy Society General Meeting that was held in Vancouver, Canada, in 2013 (1).

Supraharmonics are defined as electrical frequencies between 2 and 150 kilohertz which travel concurrently, or superimposed, within the 60 cycle (hertz) that comes from power utilities in the US - 50 hertz in Europe and Asia (1).

From 2013 to the present day, this range of frequencies has come to the attention of professionals within the power grid industry due to the problems this frequency range causes. Electricity in the 2-150 kHz range, aka supraharmonics, damages the power grid, and the electrical equipment associated with the grid (2). In other words, supraharmonics disrupt electrical equipment plugged into the grid, as well as the equipment directly linked to power production and management (3) (4).

Supraharmonics are commonly produced by electronic equipment and "smart" appliances.

They are also produced by LED and CFL lighting.

For a more comprehensive list of supraharmonic generating devices, click here.

Worldwide, the devices that create these frequencies are becoming more and more ubiquitous in our society. As we are all plugging supraharmonic generating smart devices and appliances into our outlets, they have the capacity to generate frequencies that degrade, burn out, or short circuit *other* devices and appliances that are a part of or plugged into the grid.

Alongside the growing concern about the health of our power grid, a small number of scientists, including medical doctors, have studied how these frequencies deleteriously impact human health (5) (6).

Some of these scientists have worked for the United States government, while others have worked in university settings.

What these two groups of scientists have not done well, however, is communicate between the two fields – electrical and biological.

As we sit on the precipice of initiating new technology such as launching high numbers of satellites into space which will blanket the earth with these frequencies, it would be worthwhile for us to learn about their existence as well as how they may influence life on planet earth.

While these satellites will use carrier frequencies in the gigahertz and terahertz range, the data riding on these carrier frequencies will be commonly in the kilohertz range, also known as subcarrier spacing.

What are supraharmonics and where are they found?

Supraharmonics are created by nonlinear loads (7).

An electrical load is any component or device in a circuit that consumes electrical power and turns it into another form of energy, such as light, heat, or motion.

Loads can be either linear or nonlinear.

A nonlinear load appliance will switch the electrical power on and off at very high rates compared with a linear load appliance (such as a toaster, oven, or incandescent lightbulb which draws electrical power in a smooth, continuous fashion). Before the late 1970's, the majority of our appliances consisted of linear loads. *Today, almost all electrical appliances are operated by switch mode power supplies (SMPS) that create nonlinear loads.*

In other words, a switch mode power supply (SMPS) is an electronic device that converts electrical power efficiently by rapidly switching a transistor between full-on and full-off states at extremely high rates. A typical SMPS will switch between 10-500 kHz. They are found in solar inverters, electric vehicle chargers, LED light bulbs, CFL bulbs, some light dimmers, computer power supplies, variable frequency AC drive motors for pool pumps, energy efficient AC/Heat fan motors, wind turbines, and so on.

Supraharmonics create distortions that pollute electricity's cleanliness. This is why it has also been called "dirty electricity." In the past the IEEE (Institute of Electrical and Electronics Engineers) has made recommendations by which some local power utilities comply. However, as more and more supraharmonic generating devices are getting plugged into the grid, the standards have become looser and looser.

In 1992, the IEEE created rule 519-1992 stating that there should be no single harmonic over 3% and 5% for the total harmonic distortion (THD) (8). As supraharmonics became more prevalent, that ceiling was lifted in 2016 to 5% for a single harmonic and 8% THD. With prior recommended limits commonly being exceeded, the language changed from a rule that power companies follow to more of a suggestion they may or may not abide by in 2022 (9).

Before the term supraharmonics was used, electrical professionals Dave Stetzer and Martin Graham EE, PhD, had named it a "Ubiquitous Pollutant" or referred to it as "dirty power." Dave Stetzer and Dr. Martin Graham then invented a way to measure it and quantified it with the Graham Stetzer (GS) unit (10) (11).

They later collaborated and designed a capacitive filter that removed supraharmonic frequencies within a home's electricity, making it available to anyone that wanted to clean up the voltage field.

What impact do supraharmonic frequencies have on human health?

In 2010, Ramazzini Award winner Sam Milham MD, MPH, published a book about supraharmonics and human health, calling it “Dirty Electricity.” In his book, Dr. Milham compiled biological and human epidemiological evidence explaining that supraharmonics (or dirty electricity) were linked to many of modern man’s chronic diseases such as heart disease, cancer, and diabetes (12).

Dr. Sam Milham and Magda Havas, PhD, have also conducted human experiments that reveal higher neurotransmitters in urine, lower blood sugar levels, and lower serum histamine levels once supraharmonics have been removed from the subject's environment (5) (13) .

Why are supraharmonics dangerous to humans?

Supraharmonics are dangerous to humans because they pass through our skin's natural barrier and enter into our bodies’ tissues and organs. There, supraharmonic frequencies have effects on our cells. Conversely, electricity in a lower frequency range does not have this effect.

In 1968, the US Naval Weapons Laboratory found that the total human body impedance lowered as frequencies rose (14). In other words, at lower frequencies and typical voltage density exposures, including 60 Hz (the standard frequency of our US power grid), electricity does not pass through the skin unless exposed to higher voltage.

As frequencies rise into the kiloHertz, or supraharmonic range, however, they bypass the skin’s natural impedance and enter the body. Because we are electrical organisms, these frequencies may affect cell communication, cell energy production, and other necessary cellular bioelectrical processes. Supraharmonic frequencies have also been found to affect the cell’s sodium and potassium ion channels. (15) (16)

Adverse physical symptoms may ensue after prolonged exposure, including increased mortality from cancer and heart disease. A 1972 review paper from the US Naval Medical Research Institute found an increased incidence in adverse physical symptoms in those exposed to radiofrequences which includes the subset of frequencies known as supraharmonics including: infertility, changes in intraocular pressure, eye lens opacity, headaches, insomnia, seizures, fatigue, arrhythmia, depression, anxiety, impotence, lack of concentration, hypochlorhydria, dizziness, memory loss, chest pain, tremor, changes in bone marrow cellular production, hair loss, chromosomal aberrations, chromosomal mutations, cancer, and myocardial necrosis (17).

The results from compelling review articles compiled by the American government have not been widely circulated within the general academic or medical communities in the United States (17) (18).

To confound matters as well, current biological and medical experiments at the university level do not take into consideration exposure to superharmonic frequencies in test subjects, whether cellular, plant, animal, or human. Inconsistencies with data created between laboratories studying the same topics may simply come down to discrepancies in unknown kiloHertz frequency exposure in testing environments.

This article aims to present several concepts:

1. Supraharmonics, aka radio frequencies between 2 and 150 kHz, are becoming more ubiquitous on our modern electrical power grids.
2. These frequencies damage electrical devices and appliances.
3. There are no current United States government regulations surrounding exposure to or production of these frequencies.
4. Supraharmonic frequencies are deleterious to human health and could present a significant contribution to increased mortality and morbidity rates in the United States.
5. Regulation of these frequencies is paramount to protect human, animal, and plant populations worldwide.

It is this author's desire to see awareness of the biological and electrical implications of exposures to kiloHertz frequencies become more widespread in both the general population and the scientific and medical communities. May this brief article be a call to action to begin to study, discuss, and create legislation around supraharmonics - for the sake of the health of our environment and ourselves on planet Earth.

REFERENCES:

1. Bollen M, Olofsson M, Larsson A, Ronnberg S, Lundmark M. Standards for supraharmonics (2 to 150 kHz). *IEEE Electromagnetic Compatibility Magazine* 2014;3(1):114-119. doi:10.1109/memc.2014.6798813
2. Supraharmonics in the Grid: The Hidden Threat to Power Quality. Powerside Global April 16, 2026. Accessed September 18, 2026. https://powerside.com/supraharmonics-in-the-grid-the-hidden-threat-to-power-quality/
3. Sukič P, Dmitrašinović D, Štumberger G. Impact of Voltage Supraharmonics on Power Supply Units in Low-Voltage Grids. *Electronics* 2025;14(19):3918. doi:10.3390/electronics14193918
4. Shea J, Foster B. A Silent Saboteur at the Grid's Edge: Decoding Supraharmonics. Optiv 2026. Accessed September 18, 2026. https://www.optiv.com/insights/discover/blog/silent-saboteur-grids-edge-decoding-supraharmonics
5. Havas M. Dirty electricity elevates blood sugar among electrically sensitive diabetics and may explain brittle diabetes. *Electromagn Biol Med* 2008;27(2):135-146. doi:10.1080/15368370802072075
6. Milham S. Evidence that dirty electricity is causing the worldwide epidemics of obesity and diabetes. *Electromagn Biol Med* 2014;33(1):75-78. doi:10.3109/15368378.2013.783853
7. Colombo D. Supraharmonics in Distributed Generation Power Systems. Ecmweb.com September 8, 2023. Accessed September 18, 2026. https://www.ecmweb.com/power-quality-reliability/article/21273372/supraharmonics-in-distributed-generation-power-systems
8. APPLICATION OF IEEE STD 519-1992 HARMONIC LIMITS. Academia.edu February 24, 2015. Accessed September 18, 2026.
9. IEEE 519 2022. TCI An Allient Company March 12, 2026. Accessed September 18, 2026. https://www.transcoil.com/applications/ieee-519-2014/

https://www.academia.edu/11050613/APPLICATION_OF_IEEE_STD_519_1992_HARMONIC_LIMITS
10. Dr. Martin H. Graham - Stetzer Electric. Stetzer Electric March 22, 2026. Accessed September 18, 2026. https://stetzerelectric.com/contributors/martin-graham/
11. Dave Stetzer - Stetzer Electric. Stetzer Electric March 22, 2026. Accessed September 18, 2026. https://stetzerelectric.com/contributors/dave-stetzer/
12. Milham Sam. *Dirty Electricity*. iUniverse; 2012.
13. Milham S, Stetzer D. Dirty electricity, chronic stress, neurotransmitters and disease. *Electromagnetic Biology and Medicine* 2013;32(4):500-507. doi:10.3109/15368378.2012.743909
14. Schwan H, "Electrical Impedance of the Human Body," U.S. Naval Weapons Laboratory, Dahlgren, VA, Tech. Rep. TR-2199, AD842306, Aug. 1968.
15. Xu Zhang, James R Roppolo, William C de Groat, Changfeng Tai Mechanism of Nerve Conduction Block Induced by High-Frequency Biphasic Electrical Currents IEEE Trans Biomed Eng. 2006 Dec;53(12 Pt 1):2445. doi: 10.1109/TBME.2006.884640
16. Olden, K. (1999). NIEHS report on health effects from exposure to power-line frequency electric and magnetic fields. https://www.niehs.nih.gov/sites/default/files/health/assets/docs_p_z/report_powerline_electric_mg_predates_508.pdf
17. Glaser ZR. *Bibliography of Reported Biological Phenomena ('Effects') and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation*. Research Report Project MF12.524.015-0004B, Report No. 2. Bethesda, MD: Naval Medical Research Institute, National Naval Medical Center; October 4, 1971. Revised April 20, 1972.
18. Adams RL, Williams RA. *Biological Effects of Electromagnetic Radiation (Radiowaves and Microwaves) Eurasian Communist Countries (U)*. Defense Intelligence Agency Report DST-1810S-074-76. Washington, DC: Defense Intelligence Agency; March 1976.

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