

ELECTRICITY CAN INDEED BE A MARVELOUS THING. BUT WHEN OUR ELECTRICAL CURRENT ISN'T SMOOTH, THIS CAN LEAD TO A VARIETY OF HEALTH PROBLEMS.

This is not what Thomas Edison had in mind when he invented the lightbulb.

Electricity can indeed be a marvelous thing. But when our electrical current isn't smooth, this can lead to a variety of health problems, including headaches, neurological disturbances, fatigue, depression, skin irritation, autoimmune disease, and cancer.^{2, 3}

It's called Electromagnetic Interference (EMI) by most engineers, "harmonics" and "harmonic distortion" by other electrical professionals, and "high-frequency voltage transients" by some EMF experts—or in layman's terms, "dirty electricity." Semantics aside, what we're really talking about are frequencies other than our utility's smooth and clean 60 hertz sine wave of Alternating Current (AC).

Electricity has given us many modern conveniences that make our daily lives comfortable and efficient. When it gets dark, we turn on a lamp. When it gets hot, we crank up the air conditioner. When our clothes get dirty, we run the washing machine.

But there is a dark side to all this light and power. So, let's talk dirty... I mean *electricity* dirty.

WHAT'S THE CURRENT PROBLEM WITH OUR CURRENT?

Inventor and electrical engineer Nikola Tesla once said, "If you want to find the secrets of the universe, think in terms of energy, frequency, and vibration." One need only dwell in a house with electromagnetic interference or harmonics to know that truth.

Technically speaking, harmonics are created when the electric current is continually interrupted. Mainly byproducts of our modern electronics and appliances, these frequencies can be generated inside the home and can also enter the house from the local electric utility supply.

A big environmental pollutant and suspected carcinogen, these harmonics are particularly dangerous because they accumulate and strengthen, and their frequency can sometimes reach into the radiofrequency range. Not to mention, they travel along home and utility wiring, so you may be feeling sick in your home because of your neighbor's choice in energy-saving light bulbs.

Sal La Duca, an environmental consultant and principal at Environmental Assay Inc., explains: "Harmonics are a side effect of the distortion of a waveform. The power company produces 60 hertz the way it's meant to be provided to customers. But along the way, the waveform can become distorted. This distortion is actually a combination of many frequencies. Harmonic distortion refers to how distorted the waveform is. The harmonics themselves refer to the frequencies and how far across the wave spectrum they go."

La Duca continues: "Some issues associated with harmonics are disconcerting. If you were to look at these frequencies on a spectrum analyzer, their intensity isn't constant. It's wobbling up and down at frequencies that are different than our normal 60 hertz.

ELECTRICAL POLLUTION IN YOUR HOME



Alison Main

WHY YOU CAN'T BE HEALTHY IN A SICK HOUSE

And there are frequencies even lower than the initial input of 60 hertz. Some of these belong in the brain wave range, so seizures can be associated with this."

IT'S COMING FROM INSIDE THE HOUSE

You might now be wondering whether your new furnace has thrown you down an EMF rabbit hole. Since you can't see these frequencies with the naked eye, how do you know if you've got a problem?

Start by looking for the common sources of harmonics in your home. These include most modern appliances and electronics, compact fluorescent lighting (CFLs), some LED lighting, dimmer switches, variable-speed motors (used in many furnaces and HVAC systems), blenders and mixers, routers and modems, solar-energy systems, and anything with a switch-mode power supply (inside certain computers and device chargers).

You can measure your home's exposure to dirty electricity with a basic EMI meter. Plug the meter into an electrical outlet and you'll get a reading that roughly translates to the level of electromagnetic interference. Then unplug problematic electronics and shut off circuit breakers to see if the meter's measurement number decreases, and whether you start feeling any better. If not, then the problem likely is coming from outside your house.

But these initial steps address only a fraction of the bigger picture. To really address the electrical health of your living- or workspace, it's best to hire an EMF consultant for a

comprehensive home inspection. Some EMF professionals use a spectrum analyzer, a device that enables the experts to make more-legitimate evaluations by visually displaying the waveform, to analyze the harmonics. A professional will also investigate whether the power being fed into your house has been compromised by an external source, and whether stray voltage, stray current, or your home's wiring is a contributing factor.

THE INEFFICIENCY OF EFFICIENT ENERGY

These days, energy efficiency is synonymous with a utopian vision of saving the environment from our energy-mongering selves. And indeed, there is hope in our actions to cut carbon emissions, abate greenhouse gases, and break fossil-fuel dependency—all the while saving money on our electric bill. But for the sake of our health, it's time to expand our minds on what "energy efficiency" does to our bodies.

The problem with most energy-efficient appliances and light bulbs are the switch-mode power supplies (SMPS) that are used to reduce voltage and convert from AC to DC. This process distorts the otherwise-smooth sine wave of 60 hertz AC; producing harmonics that then radiate along your wires and penetrate your living space.

Jeremy Johnson, engineer and founder of EMFanalysis.com, says: "Our renewable energy paradigm is based on creating electromagnetic frequencies. This is unwise because our bodies are electric and are affected by artificial frequencies. By only focusing on carbon reduction, we are unwittingly creating another big problem that most environmentalists don't see yet. True environmentalism also considers the EMF component. We could do it right. But it's going to take money, good engineering, and admitting that there's a problem."

Eric Windheim, founder of Windheim EMF Solutions, adds: "We're worshipping the wrong thing: energy efficiency, with no concern for the health consequences. The main culprits with green energy are the switch-mode power supplies (SMPS) and variable-speed motors. Green power is not always clean power."

The utility companies are required to provide us with clean power, and for the most part they do. And based on the industry's well-informed IEEE 519 code, any current that the utility provides that deviates from that 60 hertz cycle by a certain percentage is considered out of spec.⁶ But what happens when the harmonic distortion doesn't come from the utility companies, but is instead created inside the house, by our own individual energy choices?

It's ultimately a question of consumer versus corporate industrial accountability. La Duca pointedly expresses: "We have been driven to think economy, sustainability, environmentally conscious. And sure, a CFL bulb may produce enough brightness at lower wattage, but at what cost? Now you have a CFL lamp that's rich in harmonics and broadcasting throughout your entire living space. So, whose fault is it? The people who marketed it? We who bought into it? Or is it a joint responsibility?"

CATCHING RAYS: THE HIDDEN PROBLEM WITH SOLAR

It's a smart idea to harness the sun's natural energy to power our world. But the present engineering for solar-system inverters creates an electromagnetic-interference nightmare, both inside our homes and on the power grid. Individuals are unaware of this when they sign up with solar to save on their energy costs and help deflect climate change. The disheartening fact is, until there is better engineering in these systems, solar panels are simply serving as an electromagnetic toxin, an environmental pollutant like any other.

And here's why. If you're connected to the power grid, your home runs on Alternating Current (AC). Solar panels create energy as Direct Current (DC). Each solar-energy system has an inverter attached on the side of the house. The job of this inverter is to convert DC to AC, so that homes can actually use the captured energy. It's the process of shifting that DC to AC that generates a tremendous amount of harmonics, and these irritating frequencies not only run all over your own home wiring, but they also feed into the neighborhood's power grid. So it's not uncommon for one



solar-powered house to create harmonics inside every home on a shared power transformer.

Johnson says: "I've probably had two dozen families contact me after putting in a solar system and subsequently getting sick several months later. They develop insomnia, headaches, fatigue, ringing in the ears. They had no idea installing solar panels could cause a health problem, otherwise they wouldn't have done it. This is not a placebo effect."

And Windheim adds: "It's like back in the 1960s when everyone wanted horsepower for their

Corvettes, and we didn't care at all about air pollution, because air-pollution control devices added cost to the car. We finally realized that dirty air was killing people."

What's the solution? According to Johnson: "We need better engineering standards. We could be solving this problem, rather than making it worse. Engineers need to have the incentive to design healthier equipment. It will take consumer pressure and stricter government regulations for this to happen."

DIRTY ELECTRICITY TIPS & TRICKS

Steps to Reduce Electrical Pollution

- Identify sources of EMI in your home.
- Determine whether the EMI source is coming from inside or outside your home.
- Remove sources of EMI from your home.
- Replace sources of EMI with cleaner devices and appliances.
- Relocate problematic devices and any wiring away from your sleeping and sitting areas.
- Schedule a home assessment with a professional EMF consultant to get the full picture.

+ REFERENCE: WindheimEMFSolutions.com/emf-dangers/dirty-electricity.

FILTER OR NOT TO FILTER

If you do an Internet search for "dirty electricity," you are likely to find yourself staring at a multitude of products called "filters." There is a debate as to whether these filters serve to mitigate, resolve, or add to the harmonics problem.

Various companies have done extensive research and development into these products, in the hopes of offering consumers a simple solution to a complex and rampant electrical problem. The popular names in filters are Stetzer and GreenWave, with other companies getting on board, like RxDNA / PxDNA.

These filters plug directly into electrical outlets and power strips. The concept is to filter out the bad frequencies. And some people do report feeling better after installing them. However, sometimes the electrical environment is more complicated and filtering alone will not make the problem go away.

Most EMF consultants will advise the elimination of the EMI sources and a comprehensive home inspection before making decisions about filters.

DISEASES OF CIVILIZATION

Dr. Samuel Milham, a physician-epidemiologist specializing in public health, has published more than 100 scientific papers, many addressing the health effects of electricity. His sobering conclusion: "the so-called diseases of civilization, including cardiovascular disease, cancer, diabetes, and also suicide, was caused by electrification and the unique biological responses we have to it."¹

As an epidemiologist, Milham has traced the history of the electrification of the United States, as correlated with health and mortality effects, by examining mortality in U.S. populations with and without residential electrification. In his book *Dirty Electricity*, Milham explains: "By 1940, more than 90 percent of all the residences in the northeastern United States and California were electrified. In 1940, almost all urban residents in the United States were, therefore, exposed to electromagnetic fields (EMFs) in their residences and at work."²

His hypothesis states that "with the exception of a small part of the electromagnetic spectrum from infrared through visible light, ultraviolet light and cosmic rays, the rest of the spectrum is man-made and foreign to human evolutionary experience." He further suggests that "from the time that Thomas Edison started his direct-current electrical distribution system in the 1880s in New York City until now, when most of the world is electrified, the electricity carries high-frequency voltage transients which caused and continue to cause what are considered to be the normal diseases of civilization."³


Milham's 2001 study presented evidence that the childhood leukemia-mortality peak at ages 2 to 4, which emerged in

the United States in the 1930s, was correlated with the spread of residential electrification in the first half of the 20th century across the country.⁵

He also co-authored a study of a cancer cluster in school teachers at a California middle school, which indicated that high-frequency voltage transients were a universal carcinogen for those working in the affected school. Milham's findings have been supported by a large cancer-incidence study analyzing 200,000 California school employees, in which classroom levels of high-frequency voltage transients accurately predicted a teacher's cancer risk.⁴

Dr. Robert O. Becker, an orthopedic surgeon and father of electromedicine, spent decades researching regeneration and the bioelectric essence of life itself. His classic book, *The Body Electric*, delves into the effect of electromagnetic fields, particularly extremely low-frequency electrical fields (ELFs) and their effects on subliminal stress, the central nervous system, the endocrine, metabolic, and cardiovascular systems, and on the immune response. Becker concludes that "the human species has changed its electromagnetic background more than any other aspect of the environment. ... Now, however, we know there are primary effects on all life-forms at ELF frequencies, and in other parts of the spectrum there can be consequences for specific systems at any level."⁶

Richard A. Lear, chairman of GreenWave International, has documented the unprecedented growth in chronic disease in the United States since 1990, chronicling the explosion in four disease categories: autoimmune, neurological, metabolic, and inflammatory. These are germless diseases, without any identifiable pathogen. Lear's research points to a range of environmental factors that play a role, citing our intensifying electrical environment as the strongest link: "Our adapted environment has changed dramatically in every way. It's incorrect for people to assume we can constantly introduce electrical changes in our environment and not pay the price."⁷

None of this is to advocate a return to the Dark Ages. But perhaps we need only look to Thomas Edison for the solution: "There's a way to do it better—find it." 

Alison Main is a freelance writer, blogger, and creative director. Echoing her own health journey, her writing focuses on environmental health/illness, EMF safety, natural living, Paleo philosophies, and holistic tenets.

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