

Dirty Electricity

Lynn Churchill, PhD, B.D. Erickson II, Bradley Layton PhD PE

Dirty electricity, or “electrical pollution” has been cited frequently as a major health issue facing our population.^{1,2,3,4} Electrical pollution is virtually everywhere in the modern world and is almost unavoidable in the urban environment.

Like carbon monoxide, electrical pollution is not something you can see, smell, taste, or touch. It is something only a few people can sense, making it difficult for the rest of us to notice.⁵ With this in mind, it is important to understand what causes electrical pollution and what to look for in your everyday environment and home.

Many people complain about a variety of side effects of dirty electricity such as headaches, ringing in the ears, difficulty focusing, and numerous other symptoms.⁶ These symptoms are now being referred to as being related to electrohypersensitivity or EHS. For more information on the health effects of dirty electricity please read [Health Effects of Electrical Pollution](#).

Dirty electricity has three major sources for finding its way into your home or office:

1. Utility-provided electricity from substations and transformers.
2. Appliances, lighting and other home or office electronics.
3. Communications technologies ~ radio, TV, Wi-Fi, cellular phones etc.

Your home and office electrical circuits act as giant copper antennae, receiving electromagnetic waves like the antenna in your car, but hundreds of times larger.

Electric pollution is here to stay. What can you do?

¹ Milham, Samuel, MD, MPH. 2012. [Dirty Electricity: Electrification and the Diseases of Civilization](#). 2nd Ed iUniverse, Bloomington.

² Manion et al. 2014. [EMF Health Alert. #1 Guide for Reducing Electromagnetic Pollution in Your Home](#). ISBN: 978-0-9899085-1-1

³ Blank, M. PhD 2014 [Over-Powered: Science about Dangers of Cell Phones and WiFi Devices](#). 2014. Seven Stories Press. New York.

⁴ Halpern, Jonathan, PhD. 2013. [Electromagnetic Survival Guide: Step-by-Step Solutions](#). ISBN: 978-1499323023

⁵ Martens AL et al. 2018. [Modeled and perceived RF-EMF, noise.... symptoms?](#) Sci Total Environ. 2018 Oct 15; 639:75-83.

⁶ Electrical Pollution <http://electricalpollution.com>

A Power Perfect Energy Management System™ wired into your home or office electric panel filters and “cleans” the electricity coming in from your utility. This solution is engineered to constantly filter out unwanted harmonics from electricity coming into your home or office on one or both “hot” legs or phases.

Electricity does not simply go into an appliance and “disappear.” Electrical energy flows into our technologies and becomes heat, light, sound, motion, pressure, radiation or some combination thereof. Any leftover electricity flows back out to the breaker panel via the neutral line.

On a 120-volt two-prong plug you may notice that one blade is slightly smaller than the other. The smaller blade is the hot ‘phase’ blade or ‘in’ part of the plug providing power to an appliance or device. The larger blade is the return path to the “common.” This big blade completes the circuit, giving electrons at high potential from the small blade a path to neutral after they perform work in your home or office. The third large round prong is the ground, which is bonded (electrically attached) to metal plumbing that is physically touching the earth or “ground.” This ground wire reduces your chances of getting shocked or electrocuted by providing a favorable path for high-voltage electrons. As of 2017, National Electrical Code requires neutral to remain unbonded from grounded enclosures.⁷

To illustrate how this circuitry plays a role in causing dirty electricity with an appliance, consider when a vacuum cleaner is turned on. When that happens, you may see a line in the TV screen or hear a “pop” on the stereo speakers. The electricity flowing through the vacuum travels through the wires in the wall to the outlet, into the ‘phase’ blade of the plug, to the vacuum motor, out of the motor and then back out on the (neutral) common line that the TV and stereo share. The dirty electricity from the vacuum motor affects the TV and stereo through the common line. As a matter of fact, all of the common lines in your home or office are electrically bonded together on the same common bar in your breaker panel, so any circuit in your home can affect any and all other circuits in your home or office.

⁷ Biesterveld and Holt. 2018. <https://fyi.uwex.edu/mrec/files/2011/04/W4.-Biesterveld-NEC-grounding-MREC2010.pdf>

A Power Perfect Energy Management System™ wired in at your panel is the most effective way to clean dirty electricity as it bridges and directly filters both phases and the neutral line for all circuits in your home or office. A plug-in unit such as the EMF Eliminator™ is effective on a single circuit and to some extent cleans all circuits on that particular phase, but not as effectively as a wire-in unit at the breaker panel. A wire-in unit has the shortest path to all circuits and the incoming power to the breaker panel from the utility, and thus is the most effective technology for cleaning all of your home or office circuits.

If you or your electrician investigate your electrical system with electricity power meters, you will see variations in voltage as well as harmonics.⁸ Some dirty electricity variations come from the power you are getting from the utility or even a neighbor's electricity consumption habits, as well as something that has just turned on in your home or office. Sound crazy? See for yourself! Test one of our power conditioning products today with as appliance loads such as the refrigerator, freezer or air conditioner turn on and off.

In the USA, most homes and apartments are 120-volt "single-phase" electrical systems. This legacy system is poorly named since there are two 120° out-of-phase phases in all single-phase electrical systems. More specifically, there is an A phase and a B phase, each having 120 volts of "electrical pressure."⁹ Roughly half of your home or office outlets are on phase A, pulling power into various appliances and devices and back on neutral (common) for the return path. The remainder of your outlets are on phase B, pulling power in from the B phase and then out to neutral for the return path.

In general, if you are going to use a plug-in EMF Eliminator™, we recommend that you place one unit on a Phase A circuit and one unit on a Phase B circuit. It is best to place these on the circuits that draw the most power or create the worst harmonics.

Seeing variation in voltage and harmonics is normal. Did your neighbor turn something on, or did you? Filtering is an ongoing process: more sources of

⁸ Harmonics_Wikipedia. [https://en.wikipedia.org/wiki/Harmonics_\(electrical_power\)](https://en.wikipedia.org/wiki/Harmonics_(electrical_power))

⁹ 3-phase power Wikipedia https://en.wikipedia.org/wiki/Three-phase_electric_power



distortion may require more filters. Too much of a good thing isn't necessarily always better. Filters are capacitor banks. Over-capacitance has been observed to make your power bill go up and produce their own undesirable field effects.¹⁰ Our team of licensed professional engineers and our proprietary engineering software will ensure that we have optimized your home or office solution to give you the cleanest electricity possible.

Some competing energy management systems and units utilize harmonic rectifiers instead of capacitors. These will have lower fields but it may take more units to lower electromagnetic field (EMF) or Graham Stetzer (GS) units.^{11,12} They will also likely make your power bill go down. Satic makes both harmonic rectifier and capacitor-based solutions. We make over a dozen products in 120V, 208V, 240V and 480V models. The Power Perfect Energy Management System™ and the EMF Eliminator™ both use harmonic rectifiers and have been repeatedly verified found by 3rd-party studies to reduce harmonics and related electromagnetic fields. So, if dirty electricity and electrical pollution is a concern for you, your family, and your colleagues, Satic has a solution.

For more information visit us at:

www.saticusa.com

Satic Inc.
Missoula, MT
(406) 493-1861

¹⁰ Satic internal documentation.

¹¹ Havas & Frederick 2009. <https://magdahavas.com/gs-units-explained>

¹² EMF Minimalist. <https://www.youtube.com/watch?v=BHeyJMyGrIM>