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Hem

EMF Protection Guide

What is Dirty Electricity?



Dirty electricity, or “electrical pollution” has been cited frequently as a major health issue facing our population. Electrical pollution is virtually everywhere in

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SOURCES, PERSEUSIVITY, OF EHS:

Dirty Electricity has four major sources for finding its way into your home, office or everyday environment:

1. Utility-provided electricity from substations and transformers
2. Appliances, lighting and other home or office electronics.
3. Communications technologies such as radio, TV, Wi-Fi, cellular phones, and other wireless electronics.
4. Wiring Errors such as shared neutrals, reversed circuits, or bonded neutrals.

Did you know that your home and office electrical circuits act as a giant copper antennae? Your home wiring circuits, hundreds of times larger than the radio antenna in your car, can detect and transmit radio waves, bringing dirty electricity to any and all of your appliances, electronics and members of your household.

Electricity does not simply go into an appliance and "disappear". Electrical energy flows through various electronic and electrical technologies and becomes heat, light, sound, motion, pressure, radiation or some combination thereof.

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 "out" path to the neutral or "common". This big blade completes the circuit, giving electrons at high voltage 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

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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.

If you or your electrician investigate your electrical system with electricity power meters, you will see variations in voltage as well as harmonics. 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 Satic's power conditioning products today with appliance loads such as the refrigerator, freezer or air conditioner turned on and off. The results will be seen and likely felt immediately.

In the United States, most homes, apartments and office buildings utilize 120-volt "single-phase" electrical systems. This legacy system is poorly named since there are two 180° out-of-phase phases in all single-phase electrical systems. Specifically, the "A phase" and "B phase", each have 120 volts of "electrical pressure". Roughly half of a building's outlets are on phase A, pulling power into various appliances and devices and back on neutral (common) for the return path. The remainder are on B phase, which is identical to A phase, only 180° out-of-phase. To achieve 240 volts on a branch circuit, rather than using neutral as the common, the appliance, typically a stove or air conditioner is simply wired between the two phases with a double breaker.

Seeing variations in voltage or harmonics is normal. Did your neighbor turn something on? Did you? Filtering dirty electricity is an ongoing process: more

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(ES) units. Satic manufactures harmonic reactor and capacitor based solutions in over a dozen products in 120V, 208V, 240V and 480V models. So, if dirty electricity, electrical pollution, and unnecessary energy expenses are concerns for you, your family, and your colleagues, Satic has a solution.

What is E-Pollution?

E-Pollution is known by various names

- Electro-Pollution
- Dirty Electricity
- Electro-Smog
- Electromagnetic Fields
- Electromagnetic Radiation
- Electromagnetic Interference
- Radiofrequency
- Bluetooth Low Energy
- Microwave Radiation

We cannot escape the presence of all e-pollution, but we can take steps and adopt habits that will greatly reduce our exposure to this harmful invisible threat to health and technology. Satic's tips are simple, scientifically measurable, provided freely and can be implemented right away.

We live in a sea of of human-made e-pollution coming at us through two primary modes:

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Human-made EMFs, including ELF (extremely low frequencies) can:

- break DNA single and double strands
- cause oxidative cell damage
- disrupt cell metabolism and communication
- break down the blood-brain barrier
- alter brain glucose metabolism
- generate stress proteins
- disrupt voltage-gated calcium channels

Clearly the scientific literature is beginning to indicate clear links between e-pollution and human health. The debate is over. Human-made EMFs affect living cells and human health in measurable ways.

We have numerous assaults on our health, our immunity, our well-being. Let's not allow EMFs to possibly negatively tip the balance of our body's immune defense mechanisms.

As 5G is implemented, it will likely make things worse in that small, powerful 5G communication antennas currently being deployed must be very, very close to our homes and offices in order to penetrate walls and windows.

5G commonly uses a type of microwave frequency (300MHz-300GHz) called millimeter waves (mmW) (30300 GHz). These wave frequencies are higher than those used for 4G and are separated into low (600850 MHz), medium (2.5-3.7 GHz), and high (25-39 GHz). Plans are currently underway for global 5G deployment.

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In addition to bringing sources of electromagnetic radiation closer to us, 5G provides an avenue of unprecedented surveillance. 5G has the potential to become one of the most insidious invasions of privacy humanity has yet to witness. As we have already witnessed, privacy will likely continue to be lost, almost to the point of extinction. This technology may enable the rollout of the Big Brother that George Orwell imagined in '1984'.

This new technology, like previous telecom iterations remains sparsely tested and seemingly unavoidable. Where is the "opt-out" program?

Most people, including those employed by regulatory agencies such as the National Institutes of Health, the Occupational Safety and Health Administration, and the Environmental Protection Agency, and others who are commissioned to protect our health, struggle to keep abreast with emerging science regarding the health risks of EMFs. And unfortunately, it is common for people to be gaslighted if they express concern.

But the truth is that many people, especially people with chronic health conditions, are very sensitive to EMFs. And studies show that even if an individual or health professional don't notice the effects, EMFs are likely impacting human health. This is especially concerning as 5G wireless towers and 5G "cells" are added to city infrastructures around the world, and "smart meters" continue to be added to more homes. EMFs may impact young people more than adults.

Because people are not dropping dead left and right from using electronic

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What are Electric and Magnetic Fields?

Electric and magnetic fields (a form of massless radiation) are invisible forms of energy that are produced by electricity, which is the movement of electrons via electric current, through a wire or other medium.

An electric field is produced whenever a voltage difference or voltage gradient is present. Voltage can be thought of as "electrical pressure" used to push electrons through a wire, or lightning through the sky, much like water towers generate pressure to push water through a pipe. As voltage increases, the electric field strength also increases. Electric fields are typically measured in units of volts per meter (V/m).

A magnetic field results whenever alternating current or direct electric current flows through wires or electrical devices. Magnetic fields strength also increases as current increases. The strength of a magnetic field decreases rapidly with increasing distance from its source. Magnetic fields are measured in microteslas (μT , or millionths of a tesla).

Electric fields are produced whether or not a device or appliance is turned on, whereas magnetic fields are produced only when current is flowing, which usually requires a device to be turned on. Power lines produce magnetic fields continuously because current is almost always flowing through them. Electric fields are easily shielded or weakened by walls and other objects, whereas magnetic fields can pass through or around buildings, living things, and most other materials.

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spectrum and are not proven to damage DNA or cells directly. Low-to mid-frequency EMFs include extremely low frequency EMFs (ELF-EMFs) and radiofrequency EMFs. ELF-EMFs have frequencies of up to 300 cycles per second, or hertz (Hz), and radiofrequency EMFs range from 3 kilohertz (3 kHz, or 3,000 Hz) to 300 gigahertz (300 GHz, or 300 billion Hz). Radiofrequency radiation is typically measured in watts per square meter (w/m^2).

The electromagnetic spectrum represents all of the possible frequencies of electromagnetic energy. It ranges from extremely long wavelengths (extremely low frequency exposures such as those from power lines) to extremely short-wavelengths (x-rays and gamma rays) and include both non-ionizing and ionizing radiation.

What are common sources of non-ionizing EMFs?

There are both natural and human-made sources of non-ionizing EMFs. The earth's magnetic field, which causes the needle on a compass to point north, and which shields earth's biosphere from damaging solar wind is one example of a naturally-occurring EMF.

Human-made EMFs fall into both the ELF and radiofrequency categories of non-ionizing radiation. These EMFs can come from a number of sources:

Extremely low frequency EMFs (ELF-EMFs) emanate from power lines, electrical wiring, and electrical appliances such as electric ovens, electric shavers, hair dryers, or electric blankets, to name a few.

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(amplitude-modulated) or FM (frequency-modulated). AM radio is used for broadcasting over very long distances, whereas FM radio covers more localized areas. AM signals are transmitted from large arrays of antennas that are placed at high elevation on sites. FM radio antennas and TV broadcasting antennas, which are much smaller than AM antennas, are generally mounted on the top of high towers.

- **Radar, satellite stations, magnetic resonance imaging (MRI) devices, and industrial equipment** operate at somewhat higher radio-frequencies than cell phones.

EMFs are also emitted from:

Microwave ovens used in homes, which also operate at somewhat higher radio frequencies than cell phones. Microwave ovens are manufactured with effective shielding that has reduced the leakage of radiofrequency radiation from these appliances to barely detectable levels.

Cordless telephones, which can operate on analog or DECT (Digital Enhanced Cordless Telecommunications) technology, and typically emit radiofrequencies similar to those of cell phones. However, because cordless phones have a limited range and require a nearby base, their signal strengths are generally much lower than those of cell phones.

Cell phone base stations, consisting of antenna towers or base stations, including those for mobile phone networks and for broadcasting for radio and for television, emit various types of radiofrequency energy. Because the majority of individuals in

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Televisions and computer screens produce electric and magnetic fields at various frequencies, as well as static electric fields. The liquid crystal displays found in some laptop and desktop computers do not produce substantial electric or magnetic fields. Modern computers have conductive screens that reduce static fields produced by the screen to normal background levels.

Wireless local area networks, commonly known as Wi-Fi. These are specific types of wireless networking systems and an increasingly common source of radiofrequency radiation. Wireless networks use radio waves to connect Wi-Fi enabled devices to an access point that is connected to the internet, either physically or through some form of data connection. Most Wi-Fi devices operate at radiofrequencies that are broadly similar to cell phones, typically 2.4 to 2.5 GHz, although in recent years Wi-Fi devices that operate at somewhat higher frequencies (5, 5.3, or 5.8 GHz) have appeared. Radiofrequency radiation exposure from Wi-Fi devices is considerably lower than that from cell phones. Both sources emit levels of radiofrequency radiation that are far below the guideline of 10 W/m^2 as specified by the [International Commission on Non-Ionizing Radiation Protection](#).

Digital electric and gas meters, also known as "smart meters" are notorious emitters of e-pollution. These devices, which typically operate at the same radiofrequencies as cell phones, transmit information on consumption of electricity or gas to utility companies. Smart meters can [produce fields](#) ranging from low-levels that sometimes cannot be distinguished from the total background radiofrequency radiation levels inside a home, up to levels great enough to trigger electrohypersensitivity symptoms.

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everywhere in homes and workplaces. For example, wireless local networks are nearly always "on" and are increasingly commonplace in homes, schools, and many public places.

Some scientists have speculated that ELF-EMFs could cause cancer through mechanisms such as by reducing levels of the hormone melatonin. There is some evidence that melatonin may suppress the development of certain tumors.

What have studies shows about possible asociations between non-ionizing EMFs and cancer in children?

Numerous epidemiological studies and comprehensive reviews of the scientific literature have evaluated possible associations between exposure to non-ionizing EMFs and risk of cancer in children. Magnetic fields are the component of non-ionizing EMFs that are usually studied in relation to their possible health effects. Most of the research has focused on leukemia and brain tumors, the two most common cancers in children. Studies have examined associations of these cancers with living near power lines, with magnetic fields in the home, and with exposure of parents to high levels of magnetic fields in the workplace.

Exposure from power lines, although a study in 1979 pointed to possible association between living near electric power lines and childhood leukemia, more recent studies have had mixed findings. Several studies have analyzed the combined data from multiple studies of power line exposure and childhood leukemia:

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person's total exposure to magnetic fields because most appliances are used for only a short periods of time. And moving even a short distance from most electrical appliances reduces exposure dramatically. Again, studies have not found consistent evidence for an association between the use of household electrical appliances and risk of childhood leukemia.

Exposure to Wi-Fi. In view of the widespread use of Wi-Fi in schools, the UK Health Protection Agency (HPA, now part of Public Health England) has conducted the largest and most comprehensive measurement studies to assess exposures of children to radiofrequency electromagnetic fields from wireless computer networks. This agency concluded that radiofrequency exposures were well below recommended maximum levels and that "HPA maintains the view that there is no consistent evidence of health effects from RF exposures below guideline levels and no reason why schools and others should not use Wi-Fi equipment." A review of the published literature concluded that the few high-quality studies to date provide no evidence of biological effects from Wi-Fi exposures.

Exposure to cell phone base stations. Few studies have examined cancer risk in children living close to cell phone base stations or radio or television transmitters. None of the studies that estimated exposures on an individual level found an increased risk of pediatric tumors.

What have studies shown about possible associations between non-ionizing EMFs and cancer in adults?

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WORKPLACE EXPOSURES TO ELF RADIATION Several studies conducted in the 1980s and early 1990s reported that people who worked in some electrical occupations that exposed them to ELF radiation (such as power station operators and telephone line workers) had higher-than expected rates of some types of cancer, particularly leukemia, brain tumors, and male breast cancer.

How EMFs Affect US

We can't see them, smell them, or feel them, so how can EMFs be harmful? Although, people who are extremely sensitive can feel EMFs, most people don't take the issue seriously because EMFs are invisible.

The first thing to understand is that the body is a biochemical and bioelectric organism. The heart, brain and many cellular and metabolic processes operate through electrical charges, which can be disrupted by EMFs.

In fact, the healthy function of these organs depends in part on natural and healthy electromagnetic frequencies generated by the Earth (the Schumann resonance), the atmosphere, and the sun. This is one reason people feel so much better when they spend time in nature away from cities and buildings.

However, these natural, beneficial EMFs are blocked and drowned out in our modern environments by pavement, buildings, and an ever-present bombardment of various types of EMFs. When's the last time your bare feet touched the ground or you were out of cell range?

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Everyone is exposed to an elaborate mix of weak electric and magnetic fields, both at home and at work, from the generation and transmission of electricity, domestic appliances and industrial equipment, to broadcasting and telecommunications. As seen in the medical literature cited in this pamphlet and available through SATIC Certified™, recent medical research has shown links between extended exposure to electromagnetic radiation and many health impacts.

Everyday Effects of EMF

- tingling or vibration-like feelings where you normally keep your cell phone
- memory loss or problems with concentration
- exhaustion or tiredness
- sleep disturbance
- lack of mental clarity or focus
- aches and pains
- depression

Neurological Effects

- brain tumor
- Alzheimer's disease
- cognitive impairment
- sleep disturbances
- reduction in melatonin production
- acoustic neuroma
- Lou Gehrig's disease

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- toasted skin syndrome
- electromagnetic sensitivity
- "subliminal stress:" the reduction of blood and oxygen flow to vital systems

Top Ways to Protect Yourself from E-Pollution

It is nearly impossible to live and participate in the modern world without exposing yourself to significant amounts of EMF frequencies. However, here are some measures you can take to help buffer your body and allow your cells to recover from overexposure.

1) Increase the distance between your electronics and your body

EMF exposure rapidly decreases as the distance from a cell phone or laptop (wireless) computer increases. You can mitigate some of the damage by leaving your cell phone in another room when you're not using it and limit your usage as a whole. Don't carry your phone in your pants or shirt pocket - especially not in your front pocket if you're male and shirt pocket for ladies. Even package inserts with new cell phones warn not to carry your phone on your body due to radiation concerns. For long calls, use the speakerphone or wired earbuds. Try to stay away from Bluetooth or wireless connections. Whenever possible, increase the distance from all electronics, both wired and wireless devices.

2) Protect your desk/office and sleeping areas

At night, keep your phone off the night table, or better yet shut it down and put it in

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feet away, to lower your electromagnetic radiation exposure. Get really serious and turn off circuit breakers during sleep hours. Make sure critical devices are not affected: e.g. alarm system, medical devices and refrigerator/freezer. Use Satic Field Shield™ which not only works well, but it is totally cool-looking. Many new devices have an auto-reconnect, so you must check periodically to ensure that airplane mode remains ON and Bluetooth and WiFi remain OFF. Download books, music, video and games. Enjoy with Airplane Mode ON, Bluetooth and WiFi OFF.

3) Reduce EMF exposure in your home

Replace fluorescent, CFL, and LED lighting with Satic Pulse LED incandescent or incandescent halogen light bulbs. Make sure that the halogen light bulbs are the conventional type with the wide screw-in base. Turn OFF dimmer switches completely when not using, not just down. If you don't use the dimmer switches you may have, consider replacing them with a regular on/off switch. Maintain a landline phone if possible. Forward your cell phone calls to your landline. Replace all cordless phones with corded landline phones. Make sure there is no cordless headset. The cordless phone base emanates significant levels of radiation 24/7, even when not in use. Reject the "SMART HOME" concept. Maintain older appliances that do not have wireless sensors, i.e., "pre-smart" appliances. If you need to purchase new appliances, research to find an older model in good condition that does not have wireless sensors. The more devices that are connected to your WiFi or cellular network, the more EMFs your family will be exposed to. Ditch the "smart home" devices that can lock the door or start the oven. Decline a "smart" meter if your electric company asks you to install one. Get hard-wired electronic devices whenever possible instead of relying on wireless technology. Replace your wireless mouse or

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... or even moving home to avoid the power lines, especially if you have children. Try to be at least 1/4 mile away. If you currently live near a big power line, a cell tower, a generator station, a radio station, or electric train tracks... you may want to move. This may be hard, but if you have the opportunity to move, consider it. Also, check if your home has a smart meter and consider shielding it. Some apartment complexes put all the smart meters outside one apartment's wall. If that wall is your's you may want to relocate. Take a tech day off. Disconnect from all electronic devices, both wired and wireless as much as possible. Look for opportunities to take advantage of natural sunlight when possible. Spend as much time as possible outdoors in a natural environment.

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