

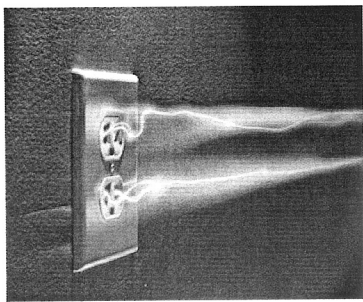
The Dirty Electricity Story

Health Impacts and What You Can Do To Protect Yourself

The “greening” of America over the past decade has created a frenzy among consumers to equip their homes with everything from compact fluorescent lighting (CFL) to dimmer switches to energy efficient appliances to home-based solar power systems. At the same time, companies are in a constant race to produce newer, better, and faster electronics and wireless technologies, and consumers are stocking their homes with more and more of these products. The sheer volume of electronics in homes and other settings is increasing at a dizzying rate.

While, this proliferation of electronics and “green” products/systems has made our lives more efficient and convenient, it has also contributed to a potentially harmful form of electro-pollution known as *DIRTY ELECTRICITY*. This type of pollution exists in nearly every home, school, and workplace across the country and, according to a growing body of evidence, may be impacting our health. That’s the bad news. The good news is there are things we can do to lower our exposure to this potentially harmful form of electrical energy.

What is Dirty Electricity?



Dirty electricity is unusable electromagnetic energy that is created by many electrical devices as they operate. It is caused by interruptions in the flow of normal 60-Hertz AC (alternating current) power that travels through wires and electrical systems in homes and other buildings. These interruptions result in voltage spikes/surges and frequency variations (also called high frequency voltage transients) that combine to form a complex and potentially harmful electromagnetic field.

How do electronic devices contribute to dirty electricity?

Many modern electronics and appliances include transformers, (either internally or within an adapter on the power cord) that convert the AC power in a building’s wiring to the DC power needed to run electronics and appliances. During this conversion process, interruptions in electrical current flow occur. In addition, many modern electronic devices (e.g., light dimmer switches, compact fluorescent light bulbs) utilize power in a more complicated way than more “old-fashioned” electronics and equipment. These modern devices are designed to operate with interrupted electric current flow.

Rather than draw power continuously, they do so intermittently in variable amounts at a high frequency, primarily for efficiency. While this can save energy, it involves frequent interruptions in electric current flow. For example, a compact fluorescent light bulb saves energy by turning

Common Sources of Dirty Electricity

- Compact fluorescent light bulbs (CFLs)
- Traditional fluorescent lighting
- Light dimmer switches
- Computers and printers
- Plasma televisions
- Stereo equipment
- Video game systems
- Cordless (DECT) telephones
- Kitchen appliances
- Washers/dryers
- Variable speed fans
- Hair dryers
- Battery/device chargers
- Wi-Fi systems

itself on and off repeatedly, thousands of times per second. Regular interruptions like these create transients (i.e., voltage spikes/surges and frequency variations) that “dirty” the normal electricity flowing along wires.

What happens to dirty electricity once it is generated? The dirty electricity created by the electrical devices within a building is circulated throughout the building, and even to other buildings in the neighborhood, via wiring. It radiates into the immediate environment via outlets, power strips, electronic devices, and cords/wires, exposing us to electromagnetic pollution (radiation).

Is Dirty Electricity Making Us Sick?

In 2007, an international group of scientists and public health experts from around the world released a detailed document that describes the detrimental effects of electromagnetic fields (EMFs) from all sources (i.e., The BioInitiative Report). In the report, the scientists cited over 2000 research studies and concluded that regular exposure to radiation associated with EMFs (even at low levels) can weaken our immune systems, cause a variety of cancers, and contribute to heart disease, dementia, and many other health problems.

Dirty electricity is a form of EMF. A growing body of evidence points to connections between dirty electricity and a wide variety of physical, emotional, and cognitive health problems. Dr. Samuel Milham, a noted physician-epidemiologist, has spent nearly thirty years researching the impact of electricity and electromagnetic fields (EMFs) on health, and is on the forefront of understanding biological effects associated with these fields. In his book, *Dirty Electricity: Electrification and the Diseases of Civilization*, Dr. Milham points to clear links between electromagnetic field exposure and twentieth century diseases of civilization, including cancer, cardiovascular disease, diabetes, and suicide. He also believes that dirty electricity and other EMFs may contribute to the development of Alzheimer’s disease, multiple sclerosis (MS), amyotrophic lateral sclerosis (ALS or Lou Gehrig’s disease), infertility issues, and other health problems, and is urging for more scientific research to further investigate these connections.

Health Impacts

Asthma
Cancer
Diabetes
Chronic Fatigue
Muscle/Joint Pain
Headaches
Sleep Disorders
ADD/ADHD
Mood Issues

Other researchers have also shown relationships between dirty electricity and major twentieth century diseases as well as various other ailments, including asthma, behavioral problems, ADD/ADHD, concentration issues, sleep disorders, headaches, chronic fatigue, muscle and joint pain (fibromyalgia), and mood issues such as depression, anxiety, and irritability.

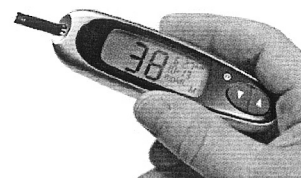
CANCER and Dirty Electricity: Evidence is mounting that electromagnetic fields (EMFs) associated with electricity are contributing to an increase in cancer rates and cancer clusters. A majority of the research in this area has focused, until recently, on the health impacts of the 60Hz magnetic fields associated with the normal current flowing through electrical wires. These magnetic fields have been linked to a variety of cancers, including childhood leukemia, brain tumors, and breast cancer, among others. Now there is evidence that **dirty electricity** (high frequency voltage transients) may also cause cancer.

While research on dirty electricity and cancer is still relatively young, the results are startling. Of particular interest is a study by Dr. Samuel Milham (mentioned previously) and Lloyd Morgan, a retired electronic engineer who has dedicated his life to researching health effects of exposure to EMFs and raising public awareness about this serious health issue. Mr. Morgan is an active member of an international science organization called the Bioelectromagnetics Society (BEMS). In their study, Milham and Morgan studied a cancer cluster at La Quinta Middle School in California. The school first opened in 1988 and was incorporated into a new building in 1990. By 2005, 16 staff among the 137 who had ever worked at the school had been diagnosed with 18 cancers, a rate nearly 3 times higher than expected. The cancers included melanoma, thyroid, uterine, breast, colon, pancreatic, ovarian, larynx, lymphoma, and multiple myeloma. In addition, about a dozen cancers have been detected among former students of the school.

In analyzing the environment of the school, Milham and Morgan discovered that dirty electricity levels in the building were very high. Through careful analysis of teacher data, as well as data on levels of dirty electricity in the classrooms and on cancer rates in the general population, they determined there was a positive correlation between dirty electricity and the incidence of cancer at La Quinta Middle School. More specifically, they determined that 64% of the cancers at the school could be attributed to dirty electricity, a very high proportion for any occupational study. Interestingly, they discovered that the 60Hz magnetic fields present at the school showed no association with cancer incidence. It was the dirty electricity (high frequency voltage transients) present in the building that seemed to present a problem.

While research in this area continues, findings like these suggest that reducing dirty electricity in places where one spends significant time (e.g., home, school, work) may be one important strategy for lowering the risk of developing cancer.

DIABETES and Dirty Electricity: Cases of diabetes have skyrocketed since the 1980's and are expected to continue growing rapidly into the future. Until recently, this increase was attributed almost exclusively to poor dietary habits, limited physical activity, and obesity. Now, there is evidence that exposure to dirty electricity may also be linked to diabetes. Recent research shows that high levels of dirty electricity can elevate blood sugar.



In one study, Lloyd Morgan (mentioned previously) showed the blood sugar levels of one non-diabetic rise to diabetic levels in environments where dirty electricity was high. In another study, Dr. Magda Havas, a researcher and professor at Trent University in Canada, found that plasma glucose levels of two Type 1 diabetics and two Type 2 diabetics responded directly to the amount of dirty electricity in their environment. The Type 1 diabetics required less insulin in environments with low levels of dirty

electricity. Blood sugar levels of the Type 2 diabetics increased with increasing exposure to dirty electricity.

Dr. Havas has also analyzed blood sugar data for diabetics in a long-term care facility (Canada) and a clinic (Japan) in which special plug-in filters were installed in outlets to reduce dirty electricity in the buildings. Of the five diabetics in the long-term care facility, for whom data were available, two (both Type 1 diabetics) had significantly lower fasting plasma glucose levels after the filters were installed. In the Japanese clinic, the plasma of the three diabetics studied became less viscous and their blood sugar dropped within 30 minutes after dirty electricity was reduced in the building from a very high level. Based on her findings, Dr. Havas has distinguished between true Type 1 and Type 2 diabetes and a third type of diabetes that she calls Type 3 diabetes. The blood sugar and blood viscosity of Type 3 diabetics are affected by dirty electricity in their environment, while this does not appear to be the case for true Type 1 and Type 2 diabetics.

Findings like those described above suggest that diabetics, pre-diabetics, and non-diabetics may benefit from reducing levels of this electromagnetic pollution in their homes. Doing so may help them better regulate their blood sugar levels.

ASTHMA and Dirty Electricity: Like diabetes, there has been a huge rise in the incidence of asthma in recent years. There is evidence to suggest that exposure to dirty electricity, which has also increased dramatically since the mid-1980s, may be a contributing factor in the growth of this ailment. Researchers believe the correlation between dirty electricity and asthma may be akin to an allergic reaction. Dr. Olle Johansson, a noted researcher at the Karolinska Institute (home of the Nobel Prize), suggests that electrical fields, such as those created by dirty power, trigger our immune systems to release inflammatory substances such as histamines and cytokines as a protective mechanism. These markers of inflammation have been shown to highly correlate with asthma and other allergic reactions.



Reducing exposure to dirty electricity may help alleviate asthma symptoms, especially for individuals who are particularly sensitive to this form of electro-pollution. One research study in a Wisconsin elementary school showed that asthma symptoms nearly disappeared when high levels of dirty electricity were reduced in classrooms. Of the 37 students at the school using asthma inhalers at the time of the study, only three continued to need them (and only in preparation for rigorous physical activity) once dirty electricity was reduced.

BEHAVIOR/LEARNING and Dirty Electricity: Schools are full of devices that generate dirty electricity, including fluorescent lights and electronic equipment such as computers, printers, digital projectors, and copy machines. Nearby power transmission lines and cell towers may also contribute to high levels of dirty electricity, or poor power quality, in schools. Recent research suggests that dirty electricity in classrooms may interfere with student learning as well as teacher wellbeing and performance. Dr. Magda Havas (mentioned previously) has studied the effects of dirty electricity in schools in Ontario, Wisconsin, and Minnesota. She found that reducing dirty electricity at the schools led to better student behavior (as reported by teachers). More specifically, students participated more actively in class, were more focused and responsive, and had fewer health complaints. Teachers had to spend less time dealing with disruptions, repeating instructions, and starting new lessons. In addition,

many teachers reported feeling less frustrated, tired, and irritable. They were better able to focus and concentrate on their teaching and reported better mood (e.g., less anxiety and depression) and better health (e.g., less headaches, dizziness, body pain, fatigue/weakness, asthma symptoms, skin irritations).

Based on these findings, reducing dirty electricity in schools may create classroom environments that are more conducive to productive learning, especially for students and teachers who are particularly sensitive to this form of electromagnetic energy (e.g., those with ADD/ADHD).

How does exposure to dirty electricity contribute to health problems?

Scientific research has shown that different types of electromagnetic fields (EMFs) can have a variety of specific biological, or physiological, effects on the body, including the examples listed below. (This list is not exhaustive.) As mentioned previously, dirty electricity is a form of electromagnetic energy. Understanding some of the biological effects that EMFs can have on the body may help shed light on how dirty electricity contributes to the development or worsening of certain health problems/conditions.

- EMFs can interfere with normal “electrical” communication between cells. This can disrupt cellular function in every part of the body and interfere with the body’s natural processes, such as sleep, hormone production, neurological function, immune response, and the ability to heal.
- EMFs can reduce melatonin levels in the body. Melatonin is a neurohormone that is vital for healthy sleep. It is also a potent, natural antioxidant that protects cells from genetic damage that can lead to cancer as well as neurological, cardiac, and reproductive damage.
- EMFs may cause chronic inflammation in the body. Inflammation has been linked with cellular/tissue/organ damage, cancer, heart disease, autoimmune diseases, diabetes, neurological diseases, and Alzheimer’s.
- EMFs can trigger the immune system to release inflammatory substances such as histamines and cytokines as a protective mechanism. These markers of inflammation have been shown to highly correlate with asthma and other allergic reactions.
- EMFs can over-stimulate the immune system, then suppress it and decrease T-lymphocyte production. T-lymphocytes orchestrate the immune system’s response to infected or malignant cells.
- EMFs raise cortisol (stress hormone) in the body. This can lead to sleep disorders, depressed immunity, cardiovascular disease, autoimmune disorders, premature aging, neurological problems, and more.
- EMFs cause cell membranes to be locked in an inactive state (oxidative stress) that prevents toxins, or free radicals, from leaving cells. There is evidence that this inactive state can damage DNA and prevent the body from repairing it, which is a first step to cancer.
- EMFs cause calcium ion efflux. Calcium ion alteration of cells by electromagnetic radiation is linked to neurological degeneration, to cancer, to dangerous heart arrhythmias, and many other health effects.

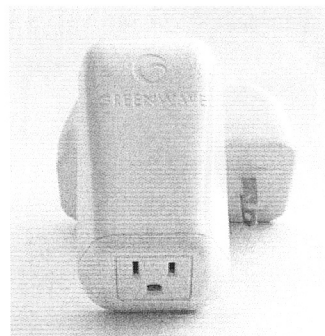
- EMFs can elevate blood sugar levels and blood viscosity, which can be associated with symptoms such as headaches, chest pain, higher blood pressure, blurred vision, and fatigue among others.

Simple Steps for Reducing Dirty Electricity in Your Environment

It is becoming increasingly clear that dirty electricity is detrimental to our health for a variety of reasons. *The good news...* Research studies suggest that reducing dirty electricity in homes, schools, offices, and other public buildings may improve the health of individuals who suffer from some diseases/conditions (e.g., diabetes, MS, asthma) and may relieve symptoms commonly associated with high levels of dirty electricity exposure. For example, some individuals with MS have been shown to have better balance and fewer tremors after reducing dirty electricity in their environment. A number of diabetics require less medication when in electromagnetically clean settings. Teachers at schools that have significantly lowered dirty electricity in classrooms report improvements in their own health (e.g., less headaches, fatigue, body pain) and mood (e.g., less anxiety and depression), and say that students behave better too. Reducing dirty electricity may also help prevent individuals from developing some diseases (e.g., a variety of cancers).

Fortunately, there are steps individuals can take to reduce levels of dirty electricity in their homes and the other places they spend significant time. Some of the simplest steps are described below.

- Install dirty electricity filters throughout your home and, if possible, in other places where you spend significant amounts of time. These filters can be plugged into outlets and power strips and will reduce dirty electricity (high frequency transients) on your wiring and potentially harmful electrical pollution in your environment. More information about dirty electricity filters is available online at www.dirtyelectricity.net, Greenwave International (www.greenwavefilters.com), and Stetzer Electric.



- Avoid installing compact fluorescent light bulbs, fluorescent tubes, and low-voltage halogen lights. LEDs (light emitting diodes) are a healthier, safer, and “greener” lighting solution. They do not emit toxic radiation and do not contain mercury.
- Clean up the power cords and transformers around your computer. Keep them as far away as possible from your feet and where you sit.
- Keep plug-in alarm clocks and other electronic devices in bedrooms at least five feet from the bed. Unplug wireless phones and routers while sleeping and consider a battery operated alarm clock.
- Move couches, beds, cribs, etc. away from walls where your electrical wiring is located or where there is an electrical panel or major appliance, such as a refrigerator, on the other side of the wall (or directly below).

- Turn off and unplug computers, printers, video games stations/consoles, and other electronics when not in use.
- Replace old TVs and computer monitors with LED/LCD models, which emit much less electromagnetic radiation.
- Avoid installing a wireless network in your home if possible. It is better to utilize wired options for accessing the Internet. At the very least, unplug your wireless network when you are not actively using it, especially when you are sleeping.
- Use corded phones rather than cordless models (e.g., DECT phones) and use the speakerphone whenever possible. If you can't live without your cordless phone, try to limit the time you spend on it and unplug the phone's base at night.
- Reduce cell phone usage. Focus on critical conversations only and use the speakerphone rather than holding the phone to your head. Keep the phone off when you are not activity using it, especially at night when you are sleeping. Don't sleep with your cell phone under your pillow and don't carry it in your pocket when it is turned on.
- Never use a laptop computer on your lap or near internal organs. Magnetic fields radiate from the bottom of these computers.
- Get rid of your microwave oven. If you can't live without it, stand at least 10 feet away from the oven when it is operating and unplug it when not in use.
- Unplug or disengage garage door openers. These devices create a standing EMF field, which radiates hundreds of feet.
- Replace light dimmer switches with regular switches.

Conclusion

Dirty electricity is all around us -- in our homes, workplaces, schools, and other public buildings. This form of electromagnetic energy, which is emitted from electrical sources in our environment (e.g., electronics, appliances, lighting, wiring), may be jeopardizing our health. Scientists have identified connections between dirty electricity and a wide variety of physical, emotional, and cognitive problems, including:

- Asthma
- ADD/ADHD
- Cancer
- Diabetes
- Chronic Fatigue
- Headaches
- Sleep Disorders
- Mood Issues

Fortunately, there are simple, pro-active steps we can take to reduce dirty electricity in our environment, thereby limiting our exposure to this potentially harmful form of electrical energy. Less exposure may translate to better health and overall well-being! Along with a nutritious diet, regular physical activity, and other healthy habits, an effort to reduce dirty electricity in one's environment can become part of an overall plan for safeguarding and maximizing health.

References and Additional Resources on Dirty Electricity and other EMFs

Books

Cross Currents: The Perils of Electropollution, The Promise of Electromedicine

By Dr. Robert O. Becker

Dirty Electricity: Electrification and the Diseases of Civilization

By Dr. Samuel Milham

Dirty Electricity and Electromagnetic Radiation: Understanding Electromagnetic Energy

By Donna Fisher

Disconnect: The Truth about Cell Phone Radiation, What the Industry Is Doing to Hide It, and How to Protect Your Family

By Devra Davis

The Body Electric: Electromagnetism and the Foundation of Life

By Dr. Robert O. Becker and Gary Selden

The Invisible Disease: The Dangers of Environmental Illnesses Caused By Electromagnetic Fields and Chemical Emissions

By Gunni Nordstrom

Zapped: Why Your Cell Phone Shouldn't Be Your Alarm Clock and 1268 Ways to Outsmart the Hazards of Electronic Pollution

By Ann Louise Gittleman

Articles

Electronic copies of most of the following articles can be found on the Internet.

How Dirty Electricity Causes Diseases

Posted on the Internet by Dr. Mercola (August 31, 2010)

How Dirty Electricity Affects Your Health

By: W. Gifford-Jones, M.D. (The Epoch Times, September 18, 2010)

Dirty Electricity and the Link to Cancer

By Donna Fisher (Nexus Magazine, October-November 2009)

Does Power Corrupt?

By Martin Mittelstaedt (The Globe and Mail, Tuesday, March 28, 2006)

Electrical Pollution Takes Its Toll on School

By Ken Luchterhand

Research Papers

Electronic copies of most of the following research papers can be found on the Internet.

A New Electromagnetic Exposure Metric: High Frequency Voltage Transients Associated with Increased Cancer Incidence in Teachers in a California School

(Dr. Samuel Milham and Lloyd Morgan)

Historical Evidence that Residential Electrification Caused the Emergence of the Childhood Leukemia Peak (S. Milham, E. M. Ossiander)

Power Quality Affects Teacher Wellbeing and Student Behavior in Three Minnesota Schools (Dr. Magda Havas and Angela Olstad)

Teacher and Student Response to the Removal of Dirty Electricity by the Graham/Stetzer Filter at Willow Wood School in Toronto, Canada

(Dr. Magda Havas)

Electromagnetic Hypersensitivity: Biological Effects of Dirty Electricity with Emphasis on Diabetes and Multiple Sclerosis (Dr. Magda Havas)

Dirty Electricity Elevates Blood Sugar Among Electrically Sensitive Diabetics and May Explain Brittle Diabetes (Dr. Magda Havas)

High Frequency Transients on Electrical Wiring: A Missing Link to Increasing Diabetes and Asthma? (Presented by Lloyd Morgan)

Blood Glucose Levels: A Study of Correlation Factors (Lloyd Morgan)

Dirty Electricity – Thesis And Hypothesis (Lloyd Morgan)

Dirty Electricity and Electrical Hypersensitivity: Five Case Studies
(Dr. Magda Havas and David Stetzer)

Fielding a Current Idea: Exploring the Public Health Impact of Electromagnetic Radiation
(Stephen J. Genuis)

Health Concerns Associated with Energy Efficient Lighting and Their Electromagnetic Emissions
(Dr. Magda Havas)