

# **A tale of two pollutants: Dirty Electricity and Wi-Fi**

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## **Introduction**

During the past 50 years our lives, and the way we go about our daily activities, have been transformed. We can listen and watch news events as they unfold in countries thousands of miles away (TV and radio). We can talk with friends and family and conduct business from the comfort of our car (mobile phones) and we can sit in the park or at a coffee shop and read our email (Wi-Fi). Indeed, words-in common usage day-like Wi-Fi, WiMax, email, text messaging were unheard of 20 years ago. Our world has changed and with this change has come some unwelcomed guests in the form of electromagnetic pollutants or electosmog.

Each invention, whether electric, electronic, or wireless has increased our exposure to electromagnetic energy at frequencies that were previously absent. We are now inundated in an electromagnetic fog that is present in our homes, schools, work environments and is becoming increasingly dense in more remote areas.

Governments tell us our exposure is safe provided it does not exceed federal guidelines, but these guidelines differ in different jurisdictions, which suggests that either some populations are intrinsically more sensitive (which is nonsense since guidelines differ by orders of magnitude) or that some governments are more protective of their citizens. No one knows what levels are “safe” but we do know what levels are associated with adverse health and these levels are well below the existing federal guidelines in the US, Canada and several other countries.

A growing population is experiencing symptoms of electrohypersensitivity (E-sensitivity), which include chronic fatigue, chronic pain, sleep disturbances, difficulty concentrating, poor short-term memory, skin irritations, ringing in the ears, visual disturbances, nausea, and dizziness. This can be brought on by exposure to mobile phones, computers, energy efficient lights, plasma TVs in the home and by antennas for radar, Wi-Fi, cell phone and TV/radio broadcast in nearby neighborhoods.

Most of the research on non-ionizing electromagnetic energy has focused on two parts of the electromagnetic spectrum: extremely low frequency electromagnetic fields (ELF-EMF) and high frequency microwave radiation (MW). One area that has received relatively little attention is dirty electricity.

## **Dirty Electricity**

Dirty electricity refers to any deviation from the power line frequency of 50/60 Hz although, in this paper, I will confine it to a specific frequency range of 4 to 100 kHz, not because this is the only range that is critical but because we can measure this range accurately and have evidence that these frequencies are biologically active.

Dirty electricity is produced by on/off switching of appliances/lights; by electronic equipment (during DC to AC conversion) such as computers, variable speed motors, plasma televisions, energy efficient lights, dimmer switches and by arching on power lines. Dirty electricity is generated within a building and comes into a building from neighbors who share the same transformer.

Dirty electricity can be measured with scopemeters and multimeters set for peak-peak voltages. It can also be readily measured with a digital microsurge meter designed for quick, accurate testing by non-professionals. Dirty electricity refers to the absolute change in voltage with time,  $dV/dt$ , and is expressed in GS units. It can be reduced with specially tuned capacitors or filters. The ones I used in my studies are the GS filters that plug into electrical outlets and short-out high frequencies on the entire electrical circuit.

We conducted studies in schools and found that when dirty electricity is reduced teacher wellbeing improves (reduced headaches, fatigue, anxiety and frustration), as does student behavior resembling ADD/ADHD. In one Wisconsin school, where GS filters were installed to reduce dirty electricity, student use of inhalers, to control asthma, declined and symptoms of multiple sclerosis for one teacher significantly improved.

Our studies with diabetics showed that some also have E-sensitivity and when they enter an environment with either dirty electricity or radio frequency radiation (RFR) from wireless technology, their blood sugar levels increase. Similarly when their environment is electromagnetically clean, blood sugar levels decrease. Changes can be seen within 30 minutes. We have tested type 1 and type 2 diabetics and have cleaned up homes and nursing homes with similar results. At this stage we do not know what percentage of the diabetic population is electrically sensitive.

Multiple sclerosis (MS), an autoimmune disease that involves the destruction of the myelin sheath around nerve cells, is increasing especially among younger people. Our studies show that MS symptoms—such as tremors, coordination, and cognitive functions—improve when the dirty electricity is reduced in a home environment. Improvements are observed within days to weeks.

This form of energy is ubiquitous in buildings but is easily measured and can be significantly reduced with GS filters plugged into outlets. It is one form of electromagnetic pollution that we can control to some degree in our home/work/school environment without government interventions.

## **Wi-Fi**

Mobile phones and wireless computers in the home communicate with base stations or antennas and both the antenna and wireless device produces radio frequency radiation in the microwave band of the electromagnetic spectrum. If we could see the energy emitted by different types of antennas, some would look like spot lights others like floodlights and a few like lasers. Most lights would be stationary, some would be revolving (radar for example)

and all would be flashing or pulsing at different frequencies. The sight would be both magnificent and disturbing at the same time.

Wi-Fi is the newest technology sweeping the nation. Hotels, airport lounges, and coffee shops have Wi-Fi zones where anyone with a laptop computer can have high-speed access to email and the internet without wires. The more antennas the greater the coverage and entire cities have introduced Wi-Fi in their downtown core to attract business. According to WiFi411 (2006) the top 10 Wi-Fi US cities based on extent of coverage are New York, Chicago, San Francisco, Atlanta, Seattle, Houston, San Diego, Austin, Washington and Pittsburg.

Wi-Fi introduces yet another layer of microwaves into our environment. The person most exposed to microwaves is the one using the computer while the computer is receiving or sending messages. Those near the computer or near the antenna will also be exposed to this radiation.

If we compare Wi-Fi antennas to cell phone or broadcast antennas, the Wi-Fi has the weakest signal and the shortest range of coverage (generally less than 500 feet) and if they were placed on top of tall towers our exposure would be minimal. But these antennas are placed on street lamps and on the side of buildings and our proximity increases our exposure. Since the effects of exposure to microwave radiation are likely to be cumulative, this does not bode well for the future when most cities will be Wi-Fi zones.

The closest we can come regarding the effects of Wi-Fi technology is to follow the research on health effects of cell phones and cell phone antennas. What this research shows is an increased risk of ipsilateral brain tumors with prolonged cell phone use. This could translate into increased ovarian, uterine and breast cancers among women and prostate cancer among men using Wi-Fi computing. These cancers are likely to appear in younger age groups. Those who live or work near Wi-Fi antennas may develop E-sensitivity in high Wi-Fi traffic zones and possibly cancer.

Specially designed RF-reflecting film attached to windows and RF-reflecting fabric used for curtains or bed canopies can significantly reduce exposure inside buildings or vehicles if the predominate source is coming from outside. So anyone who lives near a Wi-Fi antenna can reduce exposure to some degree by shielding the windows. This material needs to be used with caution as internal sources of this energy may be reflected back into the building and hence increase a person's exposure.

### **Conclusion**

Both dirty electricity and microwave radiation from Wi-Fi computers and antennas increases our daily electromagnetic exposure. Some people have already become E-sensitive and many more are likely to be affect in the coming years unless governments begin to limit this exposure to levels well below existing guidelines. Until that is done GS filters and RF-reflecting material can minimize exposure to these two pollutants.