

EMF part I – Dr. Charles Héroux DC, DIBAK.

Electromagnetic fields : The dark side of technology

In light of the title of the congress : “A vision of the future for health care practitioners”, I asked myself what’s happening in our 2011 reality compared to D.D. Palmer’s or even Dr. Goodheart’s reality. What kind of challenges will we be facing as professionals and as human beings in the next 10 years? What if our bodies were up against something that cannot be seen, smelled, tasted, heard or touched ... something undetectable by our senses, so our bodies couldn’t warn us that a danger was present? It almost sounds like a new horror or science fiction movie ... and unfortunately, it’s already too late! We are all part of a new “Star Wars” episode: The Dark Side of Technology...

“Sensitivity to electromagnetic radiation is the emerging health problem of the 21st century. It is imperative health practitioners, governments, schools and parents learn more about it. The human health stakes are significant.”

- William Rae, MD

In 1895, Dr. D.D. Palmer came up with the theory that the cause of a subluxation and eventually disease is either trauma, poison and/or autosuggestion. In 1964, Dr. George J. Goodheart, discovered how we could use manual muscle testing (MMT) as a diagnostic tool to evaluate functional neurology. He developed the concept of the triad of health: an equilateral triangle that is composed of structure at its base, with biochemistry and emotion on the other two sides. This triangle fits perfectly with Dr. Palmer’s original concept. Our goal as therapists is to help our patients restore the balance of this triangle. In 2011, there is no doubt that electromagnetic fields (EMF) must be considered in our triad of health.

On April 3rd of 1973, Dr. Martin Cooper, a former general manager at Motorola, became the first person to place a phone call using a mobile device. He called his competitor Joel Engel at Bell labs¹. The DynaTAC 8000X became the first portable phone on the market in 1983². At that time, we had no idea that in 2011 there would be almost 5 billion cell phone connections worldwide. In 1990, there were only 12.4 million connections. This is a new reality. “The current recommended maximum exposure guidance level for man-made radio frequency radiation that is used worldwide is over a trillion times the natural level that we were exposed less than a hundred years ago.”³ There is no possible escape; cell phones, Wi-Fi, radar and radio frequencies are polluting every cubic inch of our planet. In some buildings, you can easily pick up as many as 15 to 20 different Wi-Fi connections when you open your laptop.

The notion of EMF is vast. The intent of this paper is to just briefly introduce the concept of EMF. I’ll review their sources, how we can detect them with devices and recommend levels of exposure. Symptoms and conditions associated with EMF exposure will then be listed according to what researchers have found. At the end, I will make some recommendations to minimize EMF exposure. Some personal clinical observations using MMT and other types of measurements are discussed in the second part of this paper.

The Electromagnetic Spectrum

Electromagnetism is one of the four forces of the universe along with gravitation, strong nuclear and weak nuclear forces⁴. Natural electromagnetic fields are acting on everything from atoms to galaxies. Electromagnetism is part of a spectrum of frequencies that ranges from sub extremely low frequencies like earth and human emissions all the way up to gamma and cosmic rays. One part of the spectrum is called ionizing; this portion is composed of the higher frequencies like ultraviolet, X-, gamma and cosmic rays. The high energies of these rays can produce dramatic impacts on human cells such as mutations, malformations and cancers. The other portion of the spectrum is called non-ionizing, because the energy in this part of the spectrum is not enough to affect the electrons of our cells. The transition between ionizing and non-ionizing frequencies is located around the near ultra violet part of the spectrum. This paper focuses on the non-ionizing portion of the spectrum to illustrate that it might be more dangerous than previously thought.

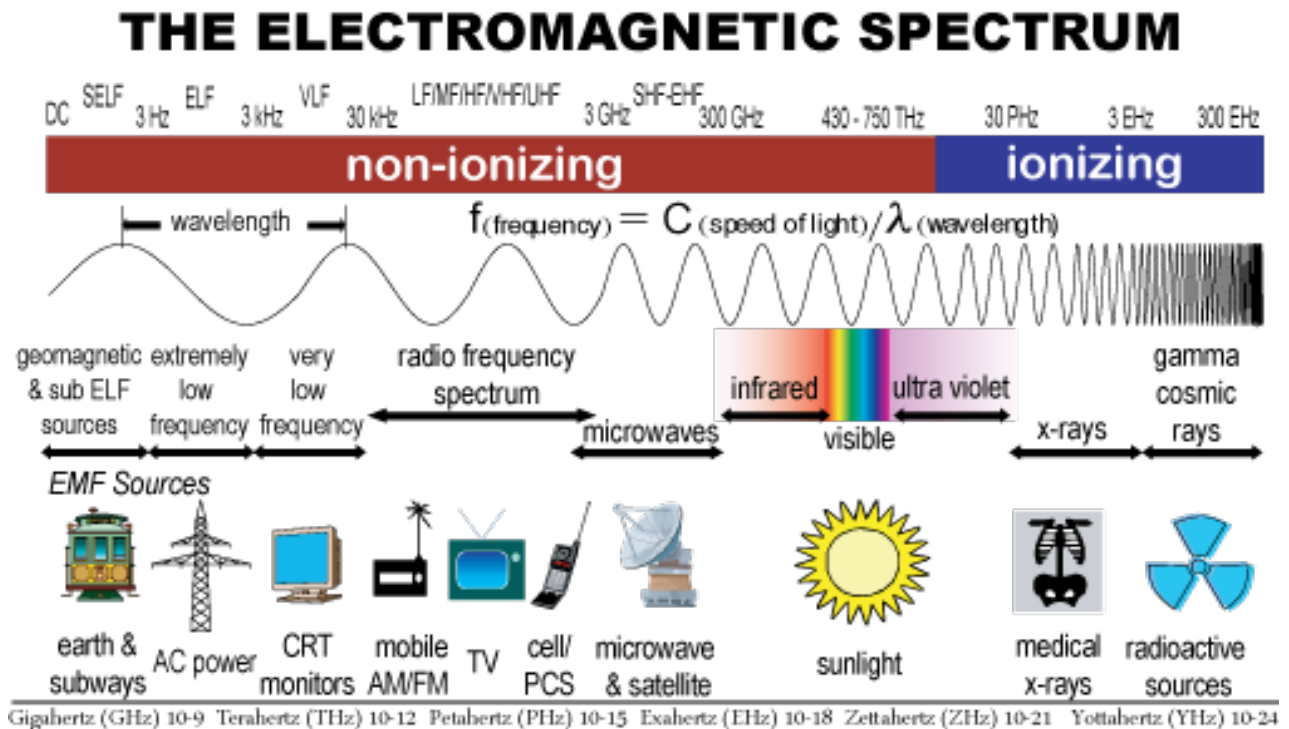


Image 1 : The Electromagnetic Spectrum

Source: http://www.vitatech.net/emf_sources.php4

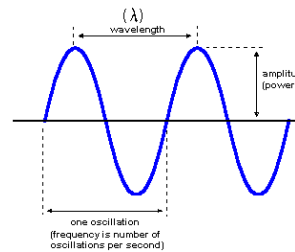
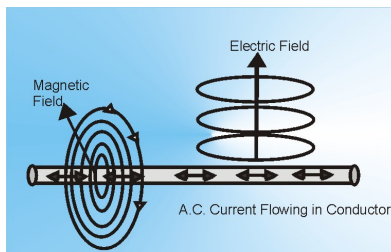
Table 1: Non-ionizing artificial EMF radiation⁵

Type	Frequency	Wavelength	Source
ELF (Extremely Low Frequencies)	1 to 3000 Hz	300,000 to 100 km	Industrial and residential current (50Hz, 60Hz, 16.6 Hz)
VLF (Very Low Frequencies)	3 to 30 KHz	100 to 10 km	Radio communications (submarine), computer screens
LF (Low Frequencies)	30 to 500 KHz	10 km to 600 m	Broadcasting, radio-telegraphy, radio beacons
SW (Small Waves)	500 to 1500 KHz	600 to 200 m	Broadcasting
MW (Medium Waves)	1.5 to 6 MHz	200 to 50 m	Broadcasting, radio lights (radio beacons)
OC (Ondes Courtes, Short Waves)	6 to 30 MHz	50 to 10 m	Radio broadcasts, long distance radio-telegraphy, radio-controlled (RC) models, CB radios, diathermy devices
VHF (Very High Frequencies)	30 to 300 MHz	10 to 1 m	Radar, frequency modulated (FM) radio
UHF and SHF (Ultra High Frequencies and Super High Frequencies) = Hyperfrequencies or Microwaves	300 MHz to 300 GHz	1 m to 1 mm	Radar, cell phones, digital enhanced cordless telecommunications (DECT) phones, computer peripherals, microwave ovens, microwaves, satellite c
I.R. (Infra Red)	300 GHz to $3,75 \times 10^{14}$	1 mm to 800 nm	Heating, monitoring and detection systems
Visible Light	$3,75$ to $7,5 \times 10^{14}$ Hz	800 to 400 nm	Lighting, lasers, neons
Near Ultra Violet	$7,5 \times 10^{14}$ Hz to 3×10^{16} Hz	400 nm to 300 nm	Black light, fluorescent, counterfeit detection, ambient light with fluorescent

Electromagnetic fields' characteristics

EMF are waves; they all have frequency, amplitude and wavelength. The frequency can be defined as the number of wave cycles per second. They are measured in Hertz (Hz). The amplitude is the height of the wave and the wavelength is the wave's peak-to-peak distance. The frequency and wavelength are inversely proportional.

All alternating currents (AC) produce an electric and a magnetic field. On their way, electric fields are easily diminished by materials as compared to magnetic fields that can penetrate almost anything. The measuring unit for electric fields is volts/meter. Magnetic fields are measured in Gauss (G) or Tesla (T). The human body is adapted to the earth's relatively high continuous magnetic field that ranges between 400-700 mG. The problem lies with the alternating magnetic fields produced by alternating currents which are much stronger than the alternating magnetic field produced by the earth (0.013-0.018 mG.⁶)



Common EMF emission sources

The extremely low frequencies (ELF) EMF's are produced by alternating currents. Currently, electricity in Europe runs on 50 Hz, while in North America, it runs on 60 Hz. Depending on how close you are to certain common electrical objects, you can be exposed to unsafe levels of EMF (see table 2).

Table 2: Magnetic fields produced by common objects in our environment

EMF levels from common sources in milliGauss (mG) at specified distances Recommended safe levels range from 0.5 to 2.5 mG ⁷		
Sources	Up to 4 inches	At 3 feet
Blender	50 – 220	0.3 – 3
Clothes washer	8 – 200	0.1 – 4
Coffee maker	6 – 29	0.1
Computer	4 – 20	2 – 5
Fluorescent light	400 – 4 000	0.1 – 5
Hair dryer	60 – 20 000	0.1 – 6
Microwave oven	100 – 500	1 – 25
Television	5 – 100	0.1 – 6
Vacuum cleaner	230 – 1 300	3 – 40
Airplane	50	

Detection of EMF

Different tools are available to measure electric and magnetic fields. One such tool that is very convenient and relatively economical is the TriField® meter. This device makes it possible to accurately measure the electric and magnetic fields produced in the range of 30 to 500 Hz with a residual sensitivity of up to 100 MHz. This meter is designed to measure fields produced by ELF (Extremely Low Frequencies) generated by electricity. For microwave and radio frequencies, such as those generated from cell phone emissions, the electric and magnetic fields are less measurable as separate entities because of the high frequency used. So, for the study of biological effects, scientists focus on their combined effect, that is, their total power densities to determine the rate of absorption of the human body⁸.



The TriField® radio/microwave position on the meter makes it possible to detect up to 3 billion Hz (3GHz)⁹, enabling measurement of the power densities of radio waves, mobile phones and different radars. The measuring unit for this is Watt/cm².

Table 3: EMF recommended exposure safety levels from extremely low frequencies (ELF) and radio/microwaves¹⁰

Electromagnetic Field Intensity Guidelines for Long-term Exposure			
	50/60 Hz Magnetic	50/60 Hz Electric	Radio/Microwave
No known symptoms (Some individuals are sensitive to these intensities)	0.65 milliGauss (65 mTesla)	6 Volt/meter	0.010 milliWatt/cm ²
Health problems increase (Epidemiological studies indicate risks of cancer and other diseases begin to increase 2 to 3 times at this range)	1.0 milliGauss (100mTesla)	10 Volt/meter	0.025 milliWatt/cm ²
Adverse health problems start (Hazard to health increases proportionally – up to 35 times greater risk for cancer and other diseases reported)	2.00 + milliGauss (200 + mTesla)	15 + Volt/meter	0.065+ milliWatt/cm ²

Dr. Jerzy Kulczycki in Basis of electromagnetic hygiene developed guidelines in 1989 after a review of international medical research.

After more than 25 years of intensive study, the health and safety conscious Swedish government has established a safety limit for exposure to ELF magnetic fields at 2.5 mG. Although the U.S. government has been slower to act in establishing its own standards, the Swedish standard is generally accepted throughout the rest of the world¹¹. Even those standards might be too permissive if we look at the recommended exposure safety levels cited in Table 3.

Cell phone safety levels of exposure

Cell phone radiation “safety exposure” on humans is determined using the Standard Anthropometric Model (SAM). To give you an idea, SAM’s weight is 200 pounds with an 11 pound head and a 6 foot 2 inch tall body! SAM’s head is filled with a uniform liquid and the maximum phone call duration used for measurements is 6 minutes¹². I wonder how close in real life cell phone users are to these parameters. The measure is called Specific Absorption Rate (SAR). This measure includes signal strength and the type and amount of tissue exposed. The maximum SAR level accepted for the US is 1.6 W/kg using a volume containing 1 gram of tissue. For Europe, the level is 2.0 W/kg using 10 grams of tissue. All cell phones must perform below these levels. Here’s the interesting part behind all these tests ... they are measured at a distance of 15 mm (0.6”) from the skull! Who talks on their phone like that? Here’s what you can read in the iPhone 4 user guide. Note that in the iPhone manual the character size is 4.5 in a word format ... the usual font for reading!

“... For optimal mobile device performance and to be sure that human exposure to RF energy does not exceed the FCC guidelines, always follow these instructions and precautions: When on a call using the built-in audio receiver in iPhone, **hold iPhone with the dock connector pointed down toward your shoulder** to increase separation from the antenna. When using iPhone near your body for voice calls or for wireless data transmission over a cellular network, **keep iPhone at least 15 mm (5/8 inch) away from the body, and only use carrying cases, belt clips, or holders that do not have metal parts and that maintain at least 15 mm (5/8 inch) separation between iPhone and the body.** “ (iPhone 4 important product Information guide, page 6 of 24).

The Motorola V195 includes a warning to keep the phone one inch from the body; the BlackBerry 8300, 0.98 inches; the Nokia 1100, one-fourth of an inch¹³. According to Om P. Gandhi, a top researcher on cell phone radiation, for every single millimeter of distance that a phone is held away from the head, the estimated exposure inside the brain is diminished by 10 percent¹⁴. What is not considered in the SAR is that the exposure impact is cumulative; Allen Frey has demonstrated this cumulative effect in experiments dating from 1972¹⁵. To know the SAR level for various cell phones, you can go to: http://reviews.cnet.com/2719-6602_7-291-1.html?tag=page:page

In 2010, in America, the average monthly cell phone bill in many urban cities ranged between 160 and 480 hours. Some teenagers and young adults reported using their cell phones up to 6 hours a day. Knowing there are roughly 720 hours in a month, that’s a lot of time on the phone! Here’s what is really frightening ... exposure from cell phone radiation has been shown to open the blood brain barrier (BBB). In mammals, including humans, the BBB’s main role is to prevent the crossing of potentially harmful compounds (such as alcohol, drugs, toxic chemicals, cigarette smoke, diesel exhaust) from the blood to the brain¹⁶. So microwave radiation would increase the toxic effects on the brain. Proteins are also mainly blocked by the BBB. Nittby experiments on rats demonstrated a leakage in albumin from the blood to the brain after a 2-hour daily cell phone exposure for one week. In the brain, presence of albumin can cause damage/death neurons¹⁷. Children are even more affected by microwave and radio frequency than adults because the BBB is not completely formed in this younger population. As well, the penetration of cell phone emissions goes deeper into their brains, mainly because their skulls are thinner. After a year of cell phone exposure, the structure of rats’ brains still looks normal but their function is not. The rats show signs of forgetfulness, senility and memory loss.¹⁸ At the present time, 50% of all 8

year olds in America have a cell phone and 75% of 12 year olds¹⁹. Something is going very wrong ...

*“The exposure of living organisms to abnormal electromagnetic fields results in significant abnormalities in physiology and function.”*²⁰ – Dr. Robert O. Becker

The World Health Organization officially labeled electromagnetic radiation from cell phones, Wi-Fi, cordless phones, smart meters, and other wireless consumer devices and infrastructure to be a Class 2B carcinogen, in the same category as lead and DDT. This class means “possible carcinogen for humans”.

Table 4: Classification of carcinogens from the International Agency for Research on Cancer²¹

Group 1	The agent (mixture) is definitely carcinogenic to humans. The exposure circumstance entails exposures that are carcinogenic to humans.
Group 2A	The agent (mixture) is probably carcinogenic to humans. The exposure circumstance entails exposures that are probably carcinogenic to humans.
Group 2B	The agent (mixture) is possibly carcinogenic to humans. The exposure circumstance entails exposures that are possibly carcinogenic to humans.
Group 3	The agent (mixture or exposure circumstance) is not classifiable as to its carcinogenicity to humans.
Group 4	The agent (mixture) is probably not carcinogenic to humans.

Symptoms and conditions associated to EMF produced by ELF 50/60 Hz exposure

General symptoms associated with electric fields generated by ELF’s are: multiple allergies and “electro sensitivity”, decrease in lymphocytes, skin and nervous system disorders. The magnetic fields from the same frequencies could induce a weakened immune system, endocrine disorders, unrefreshing sleep, leukemia and accelerated cancer risk²². Magnetic fields could even increase the risk of breast cancer²³. In 1985, Robert DeMatteo reported a possible increase in miscarriage in women using computers. In 1988, a research studying 1583 women reported that 20 hours of exposure to computers doubled the miscarriage risk²⁴. There seems to be strong evidence that electric and magnetic fields would affect bone repair and adaptation²⁵.

A double-blind study done on 100 patients by William Rea has compiled symptoms reported by patients associated with EMF exposure (effects in response to blind exposure)²⁶.

Table 5: Symptoms reported by patients associated with EMF exposure

Neurological	Tingling, sleepiness, headaches, dizziness, loss of consciousness, ear pressure
Musculoskeletal	Pains, tooth pain, spasms, vibration sensation
Respiratory	Tightness in chest, shortness of breath
Cardiovascular	Palpitations, flushing, tachycardia, edema
Gastrointestinal	Belching, nausea
Ocular	Burning in eyes
Dermal	Itching, burning, prickly pain

Symptoms and conditions associated to radiofrequency / microwave exposure

“We found a ten times higher rate of broken DNA with the new 3G phones as compared to 2G. This could be a catastrophe for the industry. It took us two years, but we finally published our works showing major damage to genetic material in cell-phone exposed human cells in the International Archives of Occupational and Environmental Health, 2008.”²⁷

– Professor Franz Adlkofer

Between 1995 and 2005, nearly all the research studies that were funded by the cell phone industry showed that cell phones are safe. On the other hand, most independent research linked cell phone exposure to a variety of problems.²⁸ Some cancers that can be associated with radio/microwave exposure are: parotid gland cancer, acoustic neurinomas and brain tumors such as gliomas.

Research done in 2008 at the Cleveland Clinic showed how sperm is affected by radio frequencies. Ashok Agarwal at the Andrology Laboratory and Reproductive Tissue Bank showed that men who have lower sperm count are those who usually keep their cell phones in the front pockets of their trousers. Subjects who did not use cell phones had far more healthy sperm than others. After exposing the sperm directly to cell phone radiation, the conclusion was the higher the exposure, the more deformities and poorer swimming abilities were observed. In 2010, Professor Aitken showed similar results and he also demonstrated the dose-response relationship (the higher the dose, the higher the damage)²⁹. Other researchers have shown similar results³⁰.

In Sweden, electro sensitivity has been recognized since 2006. After conducting a survey, Professor Johansson of the Karolinska Institute concluded that between 230,000 and 290,000 Swedish men and women out of a population of 9 million reported a variety of symptoms when in contact with EMF sources³¹. In Canada it is now estimated that almost 20% of the population is electro sensitive. It is predicted that by 2017, 50% of the world population will be electro sensitive.³² Dr. George Carlo, who used to run a multi-million dollar research program for the cell phone industry, went public regarding the dangers posed by cell phones, and uses this analogy³³:

“If you put a frog in boiling water, it will jump out. However, if you put a frog in cold water and gradually heat the water, you can cook the frog because the frog’s body will adjust to the slight changes in temperature and it will not notice it is being cooked. Well, the same thing might be happening to an unsuspecting public – a public that has not been informed about the real dangers of microwave radiation from cell phones, Wi-Fi and other high-frequency-radiation emitting devices and antennas.”

Table 6: Experimental observations with low-level microwave exposure³⁴

Observation	Effects of microwave emissions	Exposure level
Effects on DNA	Single and double strand breaks, electron flows within stacked base pairs of double helix of DNA molecules, direct gene transcription, 40-90% increase in FOS mRNA from cell phone signals	2h, 0.6 W/Kg, 0.001 W/Kg
Blood-brain barrier	Toxins may reach brain tissues: serotonin, glucose, selective permeability, allows glucose to pass	After 2 minutes as low as 0.0004 W/Kg
Psychoactive drugs	Neurotransmitter functions modified: phenobarbital (alters narcosis), entylenetetrazol (more convulsions), curare (less anesthesia), valium, librium (potentiated) Endogenous opioids activated: increase in alcohol use, less of withdrawal symptoms in morphine dependants	
Glaucoma, corneal eye damage	Worsen effects	
Behavioral changes	Major errors in judgment, vision altered; disruptive attitude (hyperactivity); memory problems; synthase inhibition caused by increase in body nitric oxide production by digital (pulsed) signals	
Cognitive functions	Faster reaction time, auditory memory retrieval (mind control), difficulty in concentration, "fuzzy thinking", dizziness (indication of serotonin activity increase)	0.16 uWatt/cm ²
Sleep	May promote sleep, sleepiness, reduction of REM sleep (important for memory and learning)	
Melatonin	Melatonin secretion decrease	
Fundamental life processes	ELF-encodes in wireless transmissions may imitate heartbeat, cellular communications, brainwaves, cell growth, human metabolism; sperm count lowered, irreversible infertility in mice after 5 generations from "an antenna park".	As low as 0.005 W/Kg
Dose dependency	Observed in Korean War, US embassy personnel in Moscow, cumulative effects.	
Microwave syndrome	Fatigue, irritability, nausea, anorexia, depression, cardiovascular disorders, hypo/hypertension; change in skin, skin allergies, eczema and psoriasis. Increase in Lymphocytes, effects in EEG's, reduced insulin production, multiple allergies, tinnitus, itching in the ear, ears feel hot	As low as 0.02 to 8.0 uWatt/cm ²

General recommendations to reduce EMF generated from ELF (50/60 Hz) sources

Above all, the areas where we spend most of our time need to be evaluated with an EMF detection device. Ensure you evaluate your home, car and office. When taking measurements, make sure to check different heights and multiple areas of each room (ex: the perimeter of beds and different floor and ceiling areas). The magnetic field can vary a lot from the floor to the ceiling; this is mainly related to the proximity of wiring. Always check a room with all power OFF, then with usual items plugged in, and finally with everything ON (lamps, computer, heating system for example). This might uncover some hidden problems.

In my office, I have a spare TriField® available. I show my patients how it works, and my patients then go home and take measurements of their house, car and office, and return with the results. We first try to find easy solutions to modify the areas of high exposure. Increasing the distance from an EMF source is usually the key to minimizing EMF exposure. Here are some general rules:

Bedroom:

1. Use battery-powered alarm clocks or, place electrical alarm clocks as far as possible from any bed. The emissions from these can be really high.
2. Do NOT plug table lamps close to the head of the bed. In fact, they should be kept away from the bed altogether, despite the tendency to put them on night tables.
3. Make sure that no EMF are coming from the wiring in the wall near the head of the bed. Move the bed away from the wall if possible should there be high EMF readings. Make sure that no electronic or electric devices are positioned in rooms adjacent to bedrooms on the wall that is shared between the two rooms especially if a bed is on the shared wall..
4. NEVER put a bed near the wall of the outside electrical entrance or the circuit breaker panel.
5. NEVER use heating pads or electric blankets; they generate a good deal of EMF.
6. Do NOT put a cordless phone base and/or cell phone close to the head of the bed.

Living room:

1. Make sure the television is at a suitable distance from the viewing area.
2. Evaluate the area where you sit to watch TV, read, or relax.

Office:

1. Place the computer, modem, and router as far as possible from your working area.
2. Have all the wires put together far from the feet.
3. Make sure you don't have a fluorescent light near your head. This type of lighting generates really high magnetic fields. The new compact fluorescent light bulbs are also horrible for EMF.
4. Keep a good distance from your computer screen.
5. Use a separate keyboard and mouse. Laptops can produce high magnetic fields.
6. NEVER work with the laptop on your lap!
7. Use wired instead of wireless devices everywhere you can.

Car:

1. Measure the EMF before buying your next car. Some cars emit really high magnetic fields. Usually the more electronics there are, the more chances there are to encounter high EMF. The new hybrid and electric cars are usually terrible for EMF.

Most EMF problems found in houses are due to wiring problems. The number one problem is having the ground connected to the water entrance. If the water pipes in the house are in copper and you happen to have a charge on your ground, the whole house becomes a source of EMF. Other common problems are poor grounding on a specific breaker, loose wires and improper wiring of three-way switches (a light that can be turned on or off from two different locations). These items can be corrected. One problem that has no solution (other than moving) is the presence of electrical power lines close to a house or office. Here are the distances to maintain from power lines to stay below 2 mG according to Hydro-Quebec: for a 120,000 volts power line, a minimum of 40 meters distance is needed; 315,000 volts, 40 to 60 meters; 735,000 volts, 100 meters³⁵. Other health authorities recommend a 150-meter distance from a 735 kV power line.³⁶

General recommendations for radio/microwave exposure

When it comes to microwave and radio frequencies, we have some methods to help reduce our exposure, but these frequencies are everywhere. The first area that we have control over is coming from cell and cordless phones. With 5 billion cell connections worldwide, it is likely that you and most of your patients have a cell phone. It is important to realize that companies are warning us to keep a distance between the cell phone and our bodies. Some examples have been given previously in this paper, and here is some general advice:

1. Use the speakerphone feature whenever possible.
2. Use good old phones with a cord as much as you can.
3. Use a Bluetooth system ... it is better than putting the cell phone directly in contact with the body, but there are some frequencies also produced by these systems.
4. Use a wired headset (some are better than others; they need to be "shielded" because the EMF from the cell phone can use the headset cable as a conductor to reach the brain).
5. Turn off wireless earpieces when communication is completed.
6. Use your cell phone only when the signal is good; there are more emissions when the signal is poor.
7. Do not use the cell phone when you are in a confined metallic area like an elevator, train or car, unless the vehicle has an external antenna to which the phone connects.
8. Do not use cell phones while you are in a moving vehicle, because the antenna will be constantly scanning for your position and the radiation will be greater.
9. Do not keep the cell phone beside your bed when you sleep, or worse yet, under the pillow.
10. Text instead of talk.
11. Don't let your young children and teens have a cell phone, but if you must, insist that they text more than talk, just not while driving ☺
12. Do NOT wear a cell phone close to the body (particularly around the abdomen or hip area) and especially if you are a pregnant woman, or a man or woman who wants to have children.
13. In addition to the above recommendations, use one of the protection devices that are reported to be effective. The MRET technology developed by Dr. Igor Smirnov has been showing good results in the different tests they conducted using MMT. Two companies, that I know of, are offering cell guard with this technology: Gia and BioPro. These devices can be ordered on the web.
14. Use an Internet cable as much as possible for Wi-Fi connections. Try to inform your neighbors about the radiation produced by their Wi-Fi and encourage them to use a cable connection. Some schools have even banned the Wi-Fi (either because there was an impact (ADD, ADHD, fatigue, etc.) or to prevent a future impact on the students and staff).

Conclusion and thoughts to ponder

The last century has brought tremendous progress in technologies, science, and medicine. All kinds of great advances have been possible because of the advent of electricity. When inventing the alternating current, Tesla had no idea of the impact he was going to have on this planet. Electricity generated EMF's are now polluting most of our environments. The negative impacts of chronic exposure to electric and magnetic fields are gradually being recognized and proven ... childhood leukemia being the most proven condition associated with overexposure to magnetic fields. The discovery of radio frequencies and microwaves for communication and transmission purposes has brought up almost infinite possibilities. We have become dependent on all our "transmission" devices. Could we live a single week without looking at the weather forecast on our iPhone ... even worse, without opening Facebook? Microwave radiation will get even higher with the growing number of users and the increasing power of newer technologies.

Independent researchers have been telling us since the 1970's that these frequencies could eventually become dangerous for mankind. DNA damage is weakening our resistance to fight cancer and other conditions. This might greatly impact our future generations. We know the problems with EMF are mainly appearing with chronic exposure, but it's too early in this "global experiment" to see what might be the final results. The human population is acting with microwaves the same way we did with cigarettes in the 40's and 50's. At that time, this now carcinogen was promoted to help some health conditions such as throat problems and asthma. It took many decades to observe the negative impacts of cigarettes. It was too late to recover fully for a lot of people and many others are/were hooked and dependent on this "poison". Will it go that far with these man-made EMF's? Time will tell... What are our options now? Reread and apply the guidelines in the recommendations section and get more people sensitized to this subject. In the long run, increasing the human consciousness and being proactive is the only solution within our individual control.

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