Steps to Reduce Exposure to Electro-magnetic Fields
By Christina Cobb

The following is an interview with Rodrigue Deschenes, an electro-magnetic field (EMF) remediation specialist, about steps that can be taken to reduce exposure to EMFs. Deschenes was trained in the science of Building Biology, whose aim is to create healthy home and work spaces. He's also the president of Wireless Education Action (WEA), the Portland, Oregon-based non-profit organization composed of parents, scientists, medical professionals, and volunteers concerned about the health effects of wireless radiation.

Creating healthy spaces for people is not just a job but a passion for you, especially electro-magnetic field (EMF) remediation. What led you to do this?

I'm originally from Quebec. Outside of working in education programs at the National Film Board of Canada for 10 years, I've been involved with electrical maintenance for many years, including wiring with licensed electricians.

Early on, I became curious about the effects of EMFs on my health. I discovered the Institute of Building Biology and Ecology, and became a Certified Building Biologist. The more I learned, the more I felt compelled to educate our most vulnerable population, children, and their parents, on the health effects of EMF radiation, before even talking about remediation. And to also educate people at risk which, I believe, most of us are.

What are the kinds of EMFs that you remediate for?

Building Biologists are trained to remediate or reduce low-frequency magnetic and electric fields (LF), radio frequency/microwave (RF/MW) radiation from wireless technologies, and dirty electricity (DE).

Why is it important to reduce exposure to EMFs?

Magnetic Fields. Many epidemiological studies, such as those involving hundreds of thousands of next-door neighbors to high-tension power lines in the US, Canada, Sweden, and Australia showed a significant increase of biological risks associated with magnetic flux densities as low as 1 to 3 mG (100 to 300nT).

Diseases and disorders observed include cancer and childhood leukemia, migraine headaches, depression, irritability, insomnia, and hormonal imbalance, as well as nerve and cardiovascular disorders. The International Agency for Research on Cancer (IARC) has now classified ELF (extremely low frequency) magnetic fields as a possible human carcinogen.

An IARC press release from June 2001 stated that numerous studies "show a fairly consistent statistical association between a doubling of risk of childhood leukemia and power-frequency (50/60 Hz) residential ELF magnetic field strengths above four milligauss]."

In 2004, Dr. Henry Lai and Dr. Narenda P. Singh determined that severe magnetic field exposure increased cell disintegration in rats. Even though official exposure limits are still notoriously high, some local authorities take heed of the scientific findings and try to establish safe zones for their citizens.

The Health Department of the City of Hamburg, Germany, for instance, requires that residential homes and daycare centers be located at a certain distance from strong sources of power-frequency fields. Based on measurements taken by Building Biology in Germany, this average value ranges from 0.2 to 0.5 milligauss (mG).

Electric and magnetic fields. It's been established that electricity affects the circadian rhythm (sleep cycle) and the production of neurohormones and melatonin. Again and again low-level, alternating electric and magnetic fields are correlated with the incidence of cancer.

Numerous studies, especially animal and cell experiments, point toward the biological effects of alternating electric and magnetic fields at low exposure levels. These biological effects include the suppression of melatonin production, impact on calcium metabolism of cells, heartbeat, the immune system, muscle and nerve pain, change of enzyme activity in cells, and changes in cell division and DNA synthesis.

Radio Frequency/Microwave (RF) Radiation. Thousands of research studies show that RF/MW radiation is one of the most damaging man-made fields ever, after nuclear radiation. In 1996, Dr. Henry Lai found enormous increase in double-strand DNA breaks in rat brain tissue after only two hours of cell phone microwave exposure.

The American Academy of Environmental Medicine (AAEM), an organization representing environmental medicine MDs, released a letter on Jan 25, 2012 to the Public Utilities Commission of California about the hazards of RF/MW radiation from wireless technologies. The most important passage is this: "*Chronic exposure to wireless radio frequency radiation is a preventable environmental hazard that is sufficiently well documented to warrant immediate preventative public health action."*

Considering that most people are exposed to various sources of harmful EMFs, how do you suggest we prioritize to reduce exposure?

The first priority is to become aware of how much hidden EMF fields/radiation we're exposed to. This is the most surprising part of an EMF survey, even for myself, and how many hidden EMF/RF sources I discover each time.

The second priority is to start with the RF/MW radiation from wireless technologies, because of the increasing number of transmitters coming into homes without the occupants' knowledge, most of them radiating 24/7.

During an RF/MW survey, I ask the homeowner or renter to turn off all the RF sources he/she knows about: Why? To be able to measure the baseline radiation at the four outside corners of the dwelling, and in the middle of the different rooms inside with an RF/MW meter. This helps to determine what's coming from nearby cell phones towers, neighbors' Wi-Fi, telecom Wi-Fi antennas on lines and posts, radar, and Doppler (weather) radars.

I usually discover that there are more RF/MW transmitters which the homeowner or renter is unaware of. Wi-Fi enabled computers, office equipment, tablets, iPads, smart phones, baby monitors, thermostats and thermometers, home security cameras, video games, smart meters, entertainment systems, and most new appliances have RF/MW transmitters.

Many people also don't realize that even when the home or office Wi-Fi router is off, the blue tooth or Wi-Fi functions of computers, tablets, smart phones, printers, etc., must also be turned off or they still emit RF/MW radiation 24/7.

In the process of discovering those RF/MW sources, I invite the client to stand by me so he/she can hear the sound made by each source and at how much power density it transmits.

Most of the time, the RF radiation is much higher inside the home or office than outside, unless there's a nearby cell phone antenna in direct view. I then make comparisons between a Wi-Fi router and a cell phone tower visible from the house, stressing that because the router is at close distance of home occupants, the router radiation exposure is equivalent to having a cell phone tower right inside the home or office.

Average readings I get in Portland, OR streets are 300-500 uW/m2. I get higher readings in most homes, because so many wireless devices that are on cumulatively increase the radiation levels.

Numerous epidemiological studies of cancer clusters have been found in populations living from 100-500 feet of the new towers in Europe, Brazil, Israel, and other countries. (See the presentations of Dr. Martin Pall, PhD, and Dr. Paul Dart, MD, to the Oregon House of Representatives Health Committee.)

What is done in a typical electric and magnetic field survey?

An LF (low frequency) meter is used to detect electric and magnetic fields. The stronger the sound that the meter makes, the stronger the field. The client then discovers where the high electric and magnetic sources are. Comparing readings with Building Biology guidelines for healthy spaces, I then recommend what is best to do. Distance is the first remediation, because most fields in a home will fall to baseline readings taken outside the house at four corners three to six feet away.

In surveying for Dirty Electricity (DE), which is the transients of cycles higher than the smooth 60Hz cycles of the electric grid, the meter produces a sound giving an idea of the strength of the transients. Before proposing DE filters, I explain how to reduce it at the source.

Tell us about your approach in remediating for EMFs in various settings (i.e., homes, apartments, institutions, etc.)

In homes, the first step is to cut off all RF sources. Not easy for most people, except for people who are already sick from RF/MW exposure. They feel miserable and want to heal, to function normally. So in the case of a client in Portland, Oregon, after hearing about her previous RF exposure history in life, I suspected that she might have become electro-hypersensitive (EHS).

I asked her to turn off every RF transmitter in the house: the Wi-Fi router, two computers, Wi-Fi/Bluetooth functions, printer's Bluetooth, wireless cameras, video game console, cordless phones, and smart phones (turned off or on airplane mode). Her husband was totally supportive to help her feel better and went along with my recommendations.

As there was very low RF radiation coming from cell phone towers and neighbors' routers, the house became "silent" from turning off everything RF. One last source of close RF was the electric smart meter. Because it was located on the other side of the garage, the signal was not reaching inside the house, except for the DE created by it. I recommended to address this by plugging in two DE filters at the electrical outlets by the main electrical panel.

They replaced cordless phones with corded phones, and got wired connections on computers and printers. But more remediation was needed. A person stricken with EHS is usually affected by electric and magnetic fields. So after finding high EMF fields in the kitchen and the main bedroom, I recommended that remote control cutoff switches be installed at the main panel to actually turn off the circuits creating high magnetic and electric fields when not needed. They both agreed to do this.

Within the first two days of turning off everything RF, the client who had EHS felt worse, not better. It was a normal reaction of my client's system to being sick for so many years. But she started to feel better thereafter.

A few weeks later, I had an electrician install the cutoff switches. This helped my client to even get better as days went by. After three to four weeks, she felt better than she had in years. That was two years ago and, the last I heard, she has regained much of her health.

EMFs in offices and apartments are more complex to remediate than residential homes. When RF radiation is coming from many outside sources, full shielding of an apartment or an office is needed. It's much easier to shield a whole space at construction than after. I can provide wiring protocols and shielding options for a new home/building that can ensure the lowest EMF possible inside the space. But when trying to shield an already built space for RF radiation exposure reduction, everything has to be done step by step. Shield and take RF readings again, and on to the next step.

The National University of Naturopathic Medicine (NUNM), for instance, has a cell phone tower facing the north side of the building, just 250 feet away. The third floor of one of the buildings is the closest to the tower in direct parallel view to it. The founders of that school became aware that they had to protect themselves, their staff, and students from such high levels of radiation.

I actually measured as high as 90,000 uW/m2, mainly coming from the cell mast. In comparison, the average readings I get in city streets is 300-500 uW/m2. In summary, there is research showing harmful biological effects at as low as 1000u W/m2.

The first phase of remediation in the NUNM office and the main classroom close by was to shield five to six huge windows with aluminum screens (special shielding films can also be used, but are much more expensive). That took the RF exposure down to 3000-10,000 uW/m2.

Only then could I measure how much RF was still coming through the walls. Concrete blocks RF completely. But those walls, being made with bricks and mortar, even if 15" thick, were still letting too much in.

I recommended the next mitigation phase to possibly lower the total RF exposure below 1000mW/m2. We're still researching what shielding material to use on the walls, the choice being a special shielding paint or aluminum screen. (Foil could also be used, but it works better when rebuilding walls. The foil can be stapled on the wall structure with sheetrock applied on top).

What are some of the biggest challenges that you and your clients have had to address?

The greatest challenge is with people whose health has been damaged by the wireless technologies, and more so for people already affected by multiple chemical sensitivities (MCS). In some cases, EMFs increase the strength of the fungi or bacteria, as is the case of mold that is found to grow 500 times more powerful when reacting to EMFs for its survival.

For most MCS/EHS affected people, it's very hard to reduce EMF exposure to a minimum in an already built house or apartment. It can be done, but it could be very costly. Radically reducing exposure would mean moving into an EMF-free zone and in a dwelling with minimum electricity. Very few can afford to do this or are ready to go in that direction, so reducing exposure where they live becomes the only viable option.

What guidelines should we keep in mind in putting together a plan to reduce our exposure?

ALARA (As Low As **Reasonably Achievable).** Major RF exposure reduction within a home is possible if one is willing to let go of the wireless convenience. Everything works faster and is safer through wired connections. If your house is receiving RF from neighbors and cell phone antennas, then Building Biology recommends reducing exposure to the minimum in sleeping areas for best recuperating sleep.

EMFs reduce the production of melatonin by up to 40 percent. Continued exposure to EMFs slowly depletes the immune system over the years, so make your bedroom a sleeping sanctuary to extend your quality of life over many years. If you can afford to shield other spaces where you spend a lot of time in, great. It will also support better health for you and your family.

Reducing exposure to electric and magnetic fields in a home is easier. Distance from four to six feet does it. Unless you have old knob and tube wiring, or you have wiring code violations causing higher magnetic fields than normal, then these need to be corrected. Many electricians don't care about those, but as Building Biologists, we can at least diagnose for wiring problems.

Many other little details have to be addressed to reduce EMF fields. First, I can show with a body voltage test how your body is conductive and is picking up electric fields the closer you get to a source. That helps to make you more aware of how electricity moves right through you.

Outside of having a full or partial survey of your home, one can also get an EMF meter for a reasonable price to find out where the hot EMF spots are. For example, you can use an Electrosmog meter to detect the EMF levels emitted from wiring under the chair where you sit. You can then find a better spot to move the chair to if needed. EHS people would also benefit from having an Electrosmog meter in order to test for hot

zones and stay away from them. I can assist in learning how to use those meters and interpret the readings.

How does a Building Biologist interpret the RF readings on an Electrosmog meter, considering the varying guidelines in different parts of the world?

The Building Biology Institute guidelines are based on accumulated knowledge from science and experience since it was founded in 1980. Building Biology standards are designed to help identify, locate, and assess potential sources of risk in order to create indoor environments that are as exposure free and as natural as practicable.

Russia and Eastern Europe are based on biological, instead of thermal, effects and are 100 times lower than the safety guidelines in western countries. Thermal effects refer to heating of tissues when, for instance, cell phones are held next to the head or tablets placed right on the lap. Biological effects happen without heating, from as far as 500 ft. away, as shown in various epidemiological studies.

Building Biology recommendations are based on the precautionary principle and are specifically designed for sleeping areas associated with long-term risks and a window of opportunity for physical regeneration.

For those with EHS and other people at risk, children from the moment of conception to 18 years old, the elderly and the sick, we recommend the same guidelines as for sleeping areas anywhere anytime. For the general adult population (non-sleeping areas), at least below 1000 uW/m2 is recommended by the Bio-Initiative Report and the Salzburg Resolution.

Given the increasing wireless pollution, any risk reduction is worth achieving. In my house, with no cordless phones, no Wi-Fi, and no wireless equipment on, I read about 30-50 uW/m2 on the main floor, and 50-70 uW/m2 on the second floor. So with wired computers, and with cell phone towers about half a mile away and partially blocked by other houses and trees, it's pretty easy to reduce exposure to something much lower than 1000 uW/m2.

What does Building Biology make of the Federal Communications Commission (FCC) guidelines that U.S. government agencies and institutions go by?

Sad to say, the FCC standards have no merit whatsoever because they don't recognize biological health effects, only thermal effects. They also have not been revised since 1996. Most local authorities like school boards or cities have chosen to fall back on the FCC guidelines to avoid doing their own research, saying "The readings are way below the 10,000,000 uW/m2 FCC guidelines," even though scientific evidence shows that biological effects have occurred at much lower levels of exposure.

As president of Wireless Education Action, what do you think needs to happen in our communities to reduce EMF exposure in a way that benefits the general public?

We need to increase our efforts to educate our communities about the health effects of EMFs because policy makers and politicians tend to not do anything until there is pressure from the bottom up.

Wireless technologies are so addictive, it's very difficult to have anyone listen. I think that where we have the most chance to bring real change is in reaching pregnant women and mothers of young children to make them aware of how much damage can be done to their children's developing brains, reproductive organs and nervous system, unless they reduce their RF exposure. This, however, does not preclude or prevent education work at all levels.

I'm inspired by the mayor of Krakow, Poland, who initiated forums for citizens to discuss the growing e-smog problem and provided citizens with meters to detect RF and ELF EMFs, so people can collect objective data on their exposure. It would be great if mayors everywhere would do something like this.

Here in Oregon, David Morrison, through his continuous work with state representative Alyssa Keny Guyer, has pushed for two bills to protect school children. The bills were tabled because lawmakers were not ready for lack of public pressure. A third one, a much needed one, Oregon Bill HB 3103, introduced in the 2017 session, requires the Dept. of Education to review scientific studies of the effects of radiation from Wi-Fi. Now is the time for all of us to build up the necessary support for this bill to be voted on by the House and Senate.

Wireless Education Action has a solid team of volunteer leaders welcoming more resources, human and financial, in priority a fundraiser/grant writer and office skill help. It's also looking forward to build and train a network of volunteers to increase public awareness on the health impacts of wireless technologies, never tested so far for safety, and yet proven to be unsafe in thousands of independent scientific studies.