Electromagnetic fields are everywhere in our lives now.

Any form of electric power to our homes or “reception” to devices like cell phones or computers has electromagnetic energy. And there are many other sources which will be identified in this newsletter along with things you can do to reduce your exposure to them. The concern about EMF and your health has emerged over time and is based on research which has shown that exposure to some EMF sources like cell phones is enough to vibrate molecules altering the chemical bonds that hold the molecules together.

Electricity occurs in two formats: Ionizing and Non-ionizing. We are most familiar with ionizing radiation (x-rays) and know that it causes the most damage in rapidly dividing cells found in tissues such as bone marrow, reproductive organs, lining of the digestive tract and skin. Scientists had thought that non-ionizing radiation (cell phones, etc.) was safe, but it is not. With both types of EMF you
can’t see or touch them, and most people can’t feel them. But, they are a form of electric smog, and like smog we are familiar with from air pollution, this smog affects our health in serious ways as well.

In May 2011 the Council of Europe summarized their finding in their report on “The Potential Dangers of Electromagnetic Fields (EMFs) and Their Effect on the Environment” stating:

“The potential health effects of the very low EMFs surrounding power lines and electrical devices are the subject of ongoing research and a significant amount of public debate. While electrical and EMFs in certain frequency bands have fully beneficial effects which are applied in medicine, other non-ionizing frequencies, be they sourced from extremely low frequencies, power lines of certain high frequency waves used in the fields of radar, telecommunications and mobile telephony appear to have more or less potentially harmful, non-thermal, biologic effects on plants, insects and animals, as well as the human body when exposed to levels that are below the official threshold values.

“One must respect the precautionary principle and revise the current threshold values; waiting for high levels of scientific and clinical proof can lead to very high health and economic costs, as was the case in the past with asbestos, leaded gas and tobacco.”
“After analyzing the scientific studies available to date, and also following the hearings for expert opinions organized in the context of the Committee on the Environment, Agriculture and Local and Regional Affairs, there is sufficient evidence of potentially harmful effects of EMFs on fauna, flora and human health to react to and guard against potentially serious environmental and health hazards.”

This committee recognized the health hazards of EMFs in 2011, yet wireless technologies have continued to proliferate throughout the world. For example, in the US, utility SMART meters continue to be rapidly installed across the country. SMART meters are part of a wireless network of connections that make it possible for utility companies to read meters without physically sending out meter readers. There are also SMART meters being installed for measuring water use and soon for natural gas as well.

The SMART meters are on 24-7 and add to the massive amounts of electro-smog created by other ubiquitous items we all use daily such as: televisions, radios, Wi-Fi, cell phones, tablets, laptops, computers, microwaves and cordless phones whose frequencies have been bombarding and microwaving us for many years.

All this electromagnetic smog is causing health problems for people who are electromagnetically sensitive or health challenged. Since radiation has cumulative effects, the number of people affected will continue to grow and many more will develop symptoms. Do you or someone in your family have new unexplained health issues or a variety of vague symptoms? Does it coincide with the installation of SMART meters in your neighborhood?

Another worrisome point is that many appliances on the market today have built-in computers and wireless devices so they can communicate with SMART meters continually. This adds to the wireless radiation operating in your home increasing the already excessive EMF exposure penetrating your living space. Some people have had to return their new appliances after they were brought into their homes as they developed electromagnetic symptoms and stayed sick until the appliances were removed.

Attributing damage to EMF radiation is sometimes difficult in that not all people are affected immediately. It is the accumulation of the EMF radiation that results in symptoms that eventually appear when the body can no longer handle the stress of the radiation exposure.
Adverse Effects in the Body

Brain

The protective brain barrier, called the Blood-Brain-Barrier or BBB, shields the brain from toxic chemicals and foreign bacteria. This barrier can be damaged by only 2 hours of EMF exposure at normal cell phone frequency resulting in nerve cell damage. This damage may or may not be reversible.

EMF exposure also damages an area of the brain called the hippocampus, the part of the brain that is involved in episodic memories. This type of memory allows people to time-travel mentally, string together life-events, permanently consolidate memories, create an awareness of one’s identity and includes the ability to process current events.

The hippocampus is damaged by the EMF radiation from cell phones, especially in the teenaged brain. EMF radiation causes changes in enzymes related to growth potentially resulting in alteration to brain function and development. Hippocampus damage may result in potential health issues including disrupted brain growth, loss of episodic memory and dementia.

Researchers looked at over 1,000 cases of brain cancer to see if there was any association with cell phone and cordless phone use. Their calculations revealed that use of a mobile phone resulted in a significantly greater incidence of brain tumors on the side of the head where the phone is most often used. It takes about 10 years for the tumors to develop and they found a greater risk with more cumulative hours of use. The highest risk was found in those who had used the phone for more than 400 hours. This was particularly pronounced in children. One of the highest risks was using a cellular phone before the age of 20.

- Weaken or destroy the Blood-Brain-Barrier
- Cause nerve cell damage
- Damages the Perkinje cells which –
  - affect movement and balance
  - affect neurotransmitters (GABA) that affect sleep and relaxation
  - decreases the number of Perkinje cells resulting in:
    › Symptoms such as insomnia, irritability and motor coordination deficits such as Parkinson’s disease.
- Affects hippocampus (episodic memory area of brain)
- Significant increases in brain cell division
- Increased incidence in brain cancers on the side of the head where phone is most commonly used. Especially for children under 20 this was a significant risk
- Potential causative connection for:
  - Autism spectrum disorders
  - Mental retardation
    - DHD, and pervasive developmental disorder
  - Alzheimer’s disease and Dementia
  - Other chronic psychiatric disorders
## Adverse Effects in the Body

### Spinal Cord Changes

The spinal cord acts as a natural antenna and exposure to certain frequencies can cause leakages in the central nervous system and disruption of the blood brain barrier. These changes are similar to autoimmune diseases (the body attacking its own cells). This seems to be greater in women than men.

<table>
<thead>
<tr>
<th>Specific Changes/Diseases from EMF exposure</th>
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<tbody>
<tr>
<td>• Brain tumors</td>
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<tr>
<td>• Brain infections</td>
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<tr>
<td>• Neurological diseases</td>
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<tr>
<td>• Alzheimer’s and dementia</td>
</tr>
<tr>
<td>• Exacerbation of AIDS and autoimmune diseases</td>
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### Immune System Damage

EMFs seem to disrupt the immune system through stimulation of various allergic and inflammatory responses as well as disruption of tissue repair processes. This increases the risk for disease including cancer. The EMFs from cell phones damage the thymus gland which helps regulate the immune system and the development of immune system cells. The thymus gland also helps to educate the immune system about the body’s own tissues which is crucial in preventing autoimmunity.

Researchers exposed mice to the cell phone frequency of 916 MHz for 2 hours a day for 5, 6 and 8 weeks. They did indeed develop tumors.

| • Disrupts tissue repair                    |
| • Stimulate allergic and inflammatory responses |
| • Damage the thymus gland                   |
| • Causes cancer                             |

### Skin Damage

EMFs disrupt calcium metabolism which is necessary for skin cell development, maturation and shedding. Abnormal calcium gradients make skin cells unable to perform their barrier function of protection, nor can they recover it once it has been disrupted.

Also affected are mast cells which contain chemicals such as histamine, serotonin and the anticoagulant heparin and are involved in inflammatory and allergic responses. Mast cells are important in skin immune reactions and are damaged by EMFs. This may explain why hive-like reactions develop when SMART meters are installed, or when computers or cell phones are used. The release of the chemicals could also explain the rashes with itchiness (histamine) and bleeding (heparin) experienced by those who have become electro-sensitive.

| • Disrupt calcium metabolism which impacts  |
| • the Blood-Brain-Barrier and              |
| • Nerve cell conduction                    |
| • Interrupts normal skin growth and        |
| • maturation pathways                      |
| • Affects Mast cell responses causing      |
| • increased inflammatory responses         |
| • and allergic reactions                    |
| • Causes rashes and itching                |
Sleep Disturbances

In looking at EMF and sleep, a study published in 2012 exposed 30 human volunteers to pulse modulated 900 MHz radiation (which is less than put out by most cell phones) for 30 minutes. They found a differences in the deepest most restorative sleep-the rapid-eye movement (REM) stage, stating “… our results provide further evidence that pulse modulated EMFs alter brain physiology…”

Melatonin, a hormone involved in the regulation of the onset and the quality of sleep, is also affected by EMF radiation. Both cell phone and SMART meter radiation operate at about 2.45 GHz frequency and have been found to decrease melatonin.

- Reduction in the hormone Melatonin resulting in:
  - Difficulty falling asleep
  - Awaking frequently during the night
  - Less restorative sleep activity (REM stage)
- Seizure-type activity especially in those who have EMF-emitting devices in their bedrooms
Possible Solutions

Correction and Prevention are the Keys

EMF and wireless technologies surround us everywhere. There are growing and increasing types and numbers of wireless devices that will further increase the density of EMF smog that we need to protect ourselves and our families from. Since EMF radiation is cumulative, it is important for everyone to reduce their amount of daily exposure. It begins with evaluating your current surroundings to determine the sources of EMF radiation.

The goal is to eliminate or reduce the exposure to electrical things in the areas where you spend the most time. The less radiation in your environment, the more your body will have the opportunity to recover from the assault it has to endure from being in today’s public areas full of Wi-Fi and other EMF sources. It is not possible to eliminate all of today’s must-have conveniences and toys; however it is possible to reduce your exposure. The more exposures you can eliminate or protect against, the better off you and your family will be.

Evaluating Your Environments

**Home:** Limit the amount of electrical interference inside and close-by outside your home. Walls provide greater insulation from these invisible beams of radiation than do windows. Find out what is behind the walls around you to determine whether there are sources of EMF emissions that could be impacting your area. For example, do you know if you have SMART meters on your home either inside or outside? Biologic Environmental Building Inspectors are available to help you for a fee. Also there are meters that you can use to measure EMF levels in your home. If there is an electrical power source such as a wireless device, Wi-Fi router or SMART meter move as far away as possible or create a shield from the emissions. In extreme cases you can use EMF blocking paint. Aluminum foil also works as an effective barrier when applied to the wall. Avoid electric heat; studies have shown a connection between an electrically-heated environment and Alzheimer’s disease.

**Bedrooms:** All electrical devices emit electromagnetic radiation, so start with removing (or moving) as many as you can. It is especially important to reduce EMFs while you sleep, so the body can repair DNA and its cells. This is essential to either regain or maintain good health. Remember too, most of the body’s regeneration and repair takes place between 10 pm and 2 am.

Do not use your cell phone as an alarm clock or place an electric clock near your head. Get a large numbered alarm clock that can be seen from a distance. Make sure there are no computers, Wi-Fi routers, or SMART meters in or near your sleeping areas. Also make sure there are no electrical devices on or near the wall where your headboard is located. Do not use an electric blanket or heating pad all night long. Instead, turn it on to warm
the bed and then unplug it. SleepNumber beds are also dangerous as they contain a connection to electricity. Your goal: avoid being covered by a layer of electricity when sleeping.

**Grounding:** Get grounding sheets that allow you to remain grounded all night. This grounding naturally discharges the buildup of electrical stress by providing the body with the earth’s electrons which we no longer receive because we no longer walk barefoot outside and we live in houses with insulated floors. Walk barefoot outside whenever possible. One of the best places to walk barefoot is on the beach with your feet in the surf. It’s not a mystery why people feel better up north or at the beach away from a lot of electromagnetic smog.

When the body is exposed to wireless devices the red blood cells clump together. Grounding the body returns the normal electrical charge to the blood cells, allowing them separate and return to their normal disk-like shape. This occurs within as little as 30-45 minutes of grounding.

**Kitchens:** DO NOT use microwave ovens – as the radiation can leak through the door. The FDA advises to not stand against or directly in front of the microwave while it is operating. Dr. Downing advised to not stand within 6 feet of it.

In addition to the radiation exposure, microwaving changes the structure of food. It heats by vibrating the food at high frequencies. This destroys vitamins and minerals and turns naturally occurring nitrogen in meat into carcinogenic nitrates.

**Cell Phones:** Use cell phones, tablets, laptops, Kindles or computers as little as possible. We all love our wireless devices and the convenience they afford but evidence of the damage they cause is mounting.

Newer cell phones have GPS and are designed to transmit periodically to update their location even when turned off. The only way to stop this pulsing is to take the battery out. If your cell phone has a battery, take it out when you are not using it. If not keep it at least 30 feet away from you while working or sleeping.

If your phone has a hands-free speaker option, use it rather than keeping your phone next to your head. Wireless earpieces do put out less radiation but people are wearing these devices for many hours a day and creating an antenna on the side of their head. This EMF exposure causes disrupted cell activity in the brain and dysregulated glucose metabolism, increasing the risk of cancer. When the signal is weaker due to being farther from a cell tower your cell phone has to use more power to make the connection, so use it only when you have 4 bars of reception.

Do not carry your cell phone next to your body such as in a front or rear pants pocket or on your belt or waistline. Anywhere you place these devices becomes an antenna bringing the signal to body parts in the area. Young people who are placing their phones in their pockets risk infertility. Pregnant women should keep their cell phones or other wireless devices away from their bodies, especially around the abdominal area to protect their developing children. DO NOT put your cell phone in your bra; it causes breast cancer.
Many people have given up their landline phones and use their cell phone 100% of the time. It is much safer to go back to hardwired landline phones.

**Laptops and Tablets:** Do not use laptops or tablets in your lap. Keep them as far away from your body as you can. Do not leave them in sleep or hibernation mode; rather turn them on only when you need to use them. In sleep or hibernation mode, they are still on and emitting an electric field.

**Workplaces:** If you are using the old cathode style monitors get a newer flat screen. Most printers create a cloud of toxic chemicals that you do not want to breathe so move it away from your desk. The same grounding recommended for your bed should be applied to your workstation. Obtain a grounding mat to place under your feet while working on your computer.

**Wearable Technology:** The Apple watch, Fitbit and other wearable devices which track your movements or receive a signal regularly can also expose you to too much EMF.

**SMART Meters**

It’s important to identify if you have a SMART meter in your home or on the outside. SMART meters may be used for gas, water and/or electricity. If your meter has wheels and dials like a clock, you still have an old, safe analog mechanical meter. You want to keep this. If it has a digital readout on the face plate, it is a wireless, EMF emitting SMART meter.

If you have old analog meters call your utility company TODAY and tell them you want to be on their permanent opt-out lists. If your utility company has installed wireless SMART meters for electric, gas or water, you can request to have your meters changed back to the safe analog type, and ask to be on their permanent opt-out lists. There may be a one-time charge for this and a small monthly fee.

Some electric utility companies state that they do not have the analog (clock face) meters to reinstall and have been installing digital meters that can be read from the street as a meter reader drives by. You want to make sure your replacement meter is a clock face meter or a meter WITHOUT A TRANSMITTER of any kind.

If you live in an apartment complex, check to see how close you are to the bank of meters servicing the building. If they are near you, use EMF blocking paint or place aluminum foil on the inside wall. Better yet, try to move to a building that does not have banks of meters.
Other Factors

Moving to a New Location

When moving to a new home, apartment or office consider what is in the area that may be generating an electric field. Anytime you are making a long-term commitment to live or work somewhere, always verify that it is safe. Check where the power lines and cell towers are in relationship to where you will be spending time. Some towers are hidden. For example, a church built a beautiful stained glass tower to hide the cell tower they erected on their property.

Solar Panels

Be aware of anything that will be generating an electric field in your environment. Solar panels emit a large electric field so do not place them on your roof or work under them.

Public Transportation

EMFs are reflected by metal and therefore amplified in metal containers. This means everyone utilizing public transportation or riding in an airplane is subjected to much more radiation inside these vehicles because of the widespread use of cell phones and WI-FI devices by passengers.

Since cell phones create far greater radiation when used inside vehicles, limit the use in your car. Better yet, keep the battery out of all phones on board while you are driving and use them only in emergencies. You are also a better driver paying attention to the road instead of your phone.

Hybrid and Electric Vehicles

Hybrids that use rear wheels to generate power are small power-generating plants and create an electrical energy field within the vehicle. Also solar panels placed on the top of cars to generate power for the vehicle's air conditioner create additional electrical fields. As discussed before, the electrical field within these types of vehicles bounces around and increases the intensity. Environmental logic aside, the EMF exposure in these vehicles should be considered seriously before buying.

On-board Bluetooth and GPS navigation systems are hard to avoid. Those who spend a great amount of time in their vehicles should limit their exposure by not buying a vehicle loaded with electronic devices or choose to not active the optional wireless services.

Change Your Diet

Antioxidants protect the body from EMF damage.

The body needs antioxidants to repair the damage from stress and toxins, and research now shows that they help repair the damage from EMF exposure. Antioxidants repair the damage from free radicals and reactive oxygen species that occur from EMF radiation exposure occurring 24-7, the same as those generated by chemicals and solar radiation.

Antioxidants are found in high amounts in fruit and vegetables. Use organic whenever possible since pesticides and EMFs create more harm together. Other antioxidants include Glutathione, Selenium, CoQ10, Lipoic Acid, Vitamin E (mixed, d-form) and Vitamin C.
Take Action Now

1. Thoroughly investigate the environments where you live, work and sleep and remove as many EMF sources as possible.
   a. Check your living and working environments for anything that may create an electromagnetic field
   b. Determine what you can do to eliminate or move away from exposure to EMF sources
   c. Place shielding around electric meters

2. Protect your body.
   a. Minimize the time working with wireless devices
   b. Ground yourself at your computer, or take grounding breaks (bare feet on the earth)
   c. Use energy optimizing devices for your body and for all of your electrical equipment to reduce the bio-active stress that repeated exposure places on the body (Bio Dots, Wi-Fi Dots, etc. and products available from companies such as Earth Calm)
   d. Avoid sitting next to people who are using wireless devices as your body is absorbing their radiation
   e. Use grounding sheets to ground all night

3. If you are moving to a new location, find one that is not near power lines or cell towers, and has living and working spaces as far from SMART meters as possible.

4. Support your body by providing it with the raw materials (antioxidants) it needs to protect and repair itself from the constant assault of EMFs. Feed it with as many antioxidants as possible in the form of organic fruit and vegetables and good quality supplements

5. For birthdays and holidays, consider giving low tech gifts

There is a bill in the Michigan House, Bill 4916, that will fight the mandatory installation of SMART meters. It will remove the requirement on residential and commercial customers to mandatorily receive a SMART meter even if they opt out. Consider contacting your representative to give your support to this important bill.

Evaluate Your Exposure and Plan for Treatment

If you want to be evaluated for your possible exposure to EMF and learn what you can do personally to treat exposure, The Downing Clinic recommends that you schedule an EDS appointment which would provide us with the specific recommendations to help improve your health.

Learn More About EMF

To learn more about EMF here are two articles you can link to:
- Energy Dots which are used to shield people from wireless technology. These are available from [http://www.emffreedom.com/index.html](http://www.emffreedom.com/index.html) or The Downing Clinic

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We have an archive of past newsletter, articles, and health fliers on our website under www.thedowningclinic.com/publications which we invite you to read or download.

Our website, www.thedowningclinic.com, will provide you with more details about our unique practice. Our approach is to use natural treatments and therapies wherever possible. To accomplish that our practice has onsite services from certified practitioners in:

- Acupuncture
- Massage
- Rolfing Structural Integration
- Electrodermal Screening
- IV Therapy (Chelation)
- Breast Imaging using Thermography
- FirstLine Therapy Lifestyle Change Program
- Detoxification treatments

And, we have a large selection of Physician-selected supplements, herbals and homeopathics.

The practice has been in business since 1991 when Nedra Downing, DO opened the doors and invited patients to partner with her for their health using nutrition, stress-reduction, reduction of prescription medications and other holistic treatments. Her approach, carried on by her daughter, Laura Kovalcik, DO, Board-Certified in Internal Medicine, continues to be sought out by people seeking healthier solutions to their health problems. Our years in business are a testament to the success of our highly-individualized care plans and the help that people have received from our practice.