



Reducing EMF Exposure for Today's Technological World

There are several different ways that we can go about making some changes in our lifestyle that could prove beneficial to our overall health. Changing our eating habits, sleep patterns, exposure to stressful environments, etc. can have a dramatic influence on our wellness. However, there is another important consideration that is not as widely recognized, understood, or fully appreciated of its direct and indirect influence on the body which can also be very beneficial for our mental and physical health:

- ***Reducing one's exposure to the various electromagnetic fields (EMFs) which come from technology-based, electrical, and other synthetic forms of energy.***

While this certainly sounds like something that would be discussed at some secret gathering in an aluminum foil covered clubhouse, the reality is, that while there are more and more wonderful technological advances and connectivity capabilities seemingly every single day, that also means more and more varying and foreign signals are being dispersed into the environment that—not only do we not know enough about, but the current available research strongly suggests can be harmful in a multitude of different ways.

Electromagnetic fields (EMF's)¹ have been linked directly or indirectly to:

- ADD/ADHD
- Allergies
- Autism
- Autoimmune disorders
- Behavioral issues in children
- Brain tumors
- Cancers
- Cardiovascular disease
- Endocrine disorders
- Fatigue
- Headaches & migraines
- Infertility (male & female)
- Leukemia
- Miscarriages
- Multiple sclerosis
- Neurodegenerative diseases
- Obesity
- Premature aging
- Sleep issues

In the last 30- to 40-some-odd-years, there has been a significant increase in the presentation to medical professionals—including the author in his 33+ years of practice—of other health issues. Complaints of things such as tinnitus, vertigo, sleep issues (getting to sleep, staying asleep, waking up with unexplained pain, not feeling rested, etc.), breathing issues (difficulty getting a full breath, being short of breath, daytime/nighttime apnea etc.), unexplained rashes, fatigue, chronic digestive issues (even after making modifications of diet and medication), TMD (temporomandibular disorders), myopia,

¹ Electromagnetic fields (EMFs) includes radiofrequency, electrical fields, magnetic fields and what is called “dirty electricity”. See “[Better Understanding EMFs](#)” and “[EMFs Super Simplified](#)” white papers for further details.

neuropathies, and the list goes on. In many cases, these issues have been looked at more extensively with further testing yet in many cases tests were not able to determine any underlying pathology.

The purpose of this handout is to provide information about specific ways to reduce our exposure to EMFs in our daily life. While there is still more research to be done to come up with even more concrete correlations and conclusions, it is the author's strong belief based on a significant amount of investigation from a multitude of sources that people should introduce steps to address this highly prevalent and pervasive artificial environmental influence.

Like most anything which requires changes in routines, habits, and behaviors, it takes a fair amount of time and thought for changes to be able to take place. The author fully appreciates that making behavioral changes requires thought and behavior change and that it is hard to know if it is worth the effort. However, going through the "[Better Understanding EMFs](#)" and "[EMF Resources, References and Further Information](#)" handouts should be able to provide more background about the "Why" and its importance on our overall health.

It also takes some time for someone to be able to notice any changes in their own body, which may be anything from general improved mobility and mental clarity to a reduction in unexplained symptoms as noted above. Research has suggested that it takes anywhere from one to eight weeks for people to actually notice health changes (i.e. weight loss, improved energy) and, on average, [66 days for habits to change](#) so think of the phrase "66 To Make It Stick" when working on trying to make changes in healthy behaviors.

It is important to recognize that *this document is meant to inform only!* This is not to critique anyone's use of any of the things listed, nor to suggest that any of the things mentioned are bad in and of themselves, nor is it to provide medical advice or discourage seeking medical help for any of the symptoms/conditions previously mentioned.

Some general considerations

There are several different steps can be taken to help reduce one's exposure to artificial/manmade EMFs—from the pretty easy and straightforward to more complex and potentially more expensive. While there are more specific examples listed further below, there are also some general things to take into consideration which help set the stage for the specific steps to be that much more effective.

The top things to consider which are modifiable are *distance, time, frequency, and amount*. This refers to not just technology-based things, but electrical and rechargeable things as well. *Susceptibility* refers to the individual differences in effect between each person.

Distance:

- The *further one can keep themselves* from any item which produces EMF's, the better.
 - This would include the devices, cords, charging stations, and outlets of:
 - Cordless or wireless anything (i.e. phones, laptops, etc.)
 - Corded or wired anything (lights, TVs, etc.)
 - Routers, smart TVs, circuit panels, smart meters, etc.
 - Power lines, power stations, antennas, mobile towers, etc.

- Environments which have a lot of fluorescent lighting, cameras, security systems, wireless connectivity, etc.
 - This does not mean that going to a shopping center, airport or other such environment is inherently bad, just appreciate that these types of places will emit larger amounts of EMFs.

Time:

- The *amount of time* one engages in various things which produce electromagnetic energy is also an important consideration.
 - The less the better overall and trying to disperse it into shorter exposures spread out over a longer period whenever possible is better.
 - Try to consider/monitor how much time, at a time, is being spent on a smart phone, tablet, laptop, etc.

Frequency:

- *How often* one uses things which produce higher amounts of EMFs.
 - Another way of looking at it is how often do we expose ourselves to what are essentially blasts of EMFs.
 - For example, each time someone picks up and turns on their phone, they are being bombarded with these waves during the connection process, and then again with each thing that triggers the device to look to draw in information from wi-fi and/or a cell tower/satellite.

Amount:

- *Quantity* is also a factor to consider.
 - Having your phone in your pocket with wi-fi and Bluetooth on, wearing wireless earbuds, with a smartwatch on, with a tablet and laptop in your backpack is a great example of a large amount of EMF activity going on in one area—with your body also acting like an antenna absorbing all these signals.
 - Like most things, *moderation* is key.
 - A nice example is if someone chooses to expose themselves consistently to less-than-ideal foods that are not great for the body, then cumulatively that *frequency and amount* increases the possibility that health issues will develop—especially something like chronic inflammation which can make them vulnerable to sickness or other health conditions.
 - And much like the example above, increased amount of time being exposed to EMFs has clearly demonstrated to affect things at the cellular level which can influence inflammation.

Susceptibility:

- Some people's systems are more susceptible to the effects of EMFs.
 - While all human organisms have consistencies of vulnerability of damage induced by environmental toxins such as molds, chemicals, EMFs, etc., some people's systems will respond more acutely (noticeably) and symptomatically than others.
 - Other people may not notice these effects acutely or even until it may have had an impact on other health issues as they may seemingly be not related.

A useful analogy would be the best way for people to try to avoid getting Covid during the pandemic—*distance, time, frequency, and amount* of exposure in public situations were the key strategies to help mitigate one's likelihood of contracting the virus, while also appreciating that some people's systems had more *susceptibility* to potentially catastrophic consequences with overexposure.

Sensations

- Listening to our body is another important element of self-mitigation. Allowing *sensations to help guide* things can be quite helpful.
 - For example, anything you touch that has any electricity is emitting EMFs—and if it is warm, it is emitting even more....and the warmer the greater!
 - Your phone getting warm while you use it, or using your phone while it is charging is a great example of this. It's basically telling you to step away.
- Things you touch that you "*sense*" *electricity*—light switches, outlets, older appliances or cords/extension cords, etc.—the greater the EMFs that are being emitted.
- Things you are near and you "*sense*" *electricity*—powerlines overhead, buildings or areas you are in that "*feel*" electric, etc.—the greater the EMFs that are being emitted.
- Changes in *how we feel overall* with increased exposure to high-emitting EMFs can also be quite helpful.
 - For example, symptoms such as neck/upper shoulder tension or discomfort, eye strain, elbow/wrist/hand pain that can occur with use of a computer—especially a laptop—can potentially be just as much about EMF absorption disrupting the body's messaging system as it being one's "*ergonomics*".
 - Another example may be poor and/or disturbed sleep while one is wearing a smart watch or tracking device or sleeps with their phone by their head—especially if it is charging at the same time.

These next two are considerations for reframing mindset and behaviors. Again, there is nothing wrong with using or being near anything that is discussed, but being better educated and then be able to make decisions on one's own is important.

Necessity

- By *honestly asking yourself* the importance and/or "*necessity*" of any use, at any given time, of what you might be using various technology and power for, you might be able to make better decisions about when and how you go about using it.
- On a deeper level, this also allows people to be more present in their environment which has clearly been determined to help with mental health and homeostasis,

Perspective

- The more we know, *the better informed we are*, and the better we can then make decisions based on the information.
- Shifting our perspective to think that *all things electrical might be just a little bit toxic*—even in some small way—can also be helpful when trying to create the appropriate change.
 - Taking practical steps to create changes vs worrying that things are truly toxic should help keep things in perspective.
 - Think of it like pesticides and that people really should not be near them regularly. Even if they are not actively using or applying it, the product is toxic and the container can

emit toxic/noxious fumes which can affect one's health (with distance, time amount and sensation also playing a role in this example).

Some more specific examples

Looking more specifically at items and situations we find ourselves in more regularly, here is a breakdown of some things to consider in terms of mitigating their impact on our bodies. The author fully appreciates that there are situations and things that are happening in people's lives which do not allow for some of these measures, but at least knowing about them and then making appropriate changes when practical and able would be helpful:

- Smart/cellular phones (would be better considered a cellular or smart *device* vs phone).
 - Do not use your phone next to your ear to talk, or by your head to do anything, basically, ever.
 - Use hands-free speaker whenever possible (and if in a situation where it is not practical, decide if it can wait).
 - Use passcode to turn on vs facial recognition.
 - Do not carry smart phones on your person, if possible.
 - If you do need to, then not near reproductive organs, near head, etc.
 - In a purse or backpack on outside pocket so farther away from the body.
 - Consider getting an EMF-blocking case, a Faraday bag or other EMF-blocking carrying device.
 - Use Airplane mode (which should really be called "Safety mode") in your settings whenever possible.
 - Using "Safety mode" still allows you to pick up things when near a wi-fi signal but it significantly reduces the overall EMF load when in use or not in use.
 - You can still send/receive texts and do internet things when in "Safety mode" when connected to wi-fi. However, you would need to turn it off when trying to find a signal when wi-fi is not available.
 - Do not use smart devices while they are charging.
 - Cellphone chargers emit a tremendous amount of EMFs when plugged into the phone.
 - They also still emit a lot of EMFs when plugged in and not charging the phone so unplug completely when finished.
 - If there is a low signal, then the phone is emitting a lot of EMFs trying to connect to somewhere. This is true when on "Safety mode" or connected to wi-fi.
 - "I only have two bars" should translate to "I am going to wait to look that up or make that call".
 - For each signal bar missing, exposure increases several hundred times.
 - Places like deep inside a building without wi-fi, basements, elevators, etc. make the phone work considerably harder.
 - Be aware that when you are traveling in a car and thus off "Safety mode", that your phone will be constantly looking for a signal and will be drawing from sources all over to do this vs when one is stationary.
 - This produces a tremendous number of EMFs even if your phone is sitting and powered on but not being used.
 - Cars, buses and trains can actually keep the EMFs more contained inside the vehicle, allowing them to permeate more extensively to you and others around you, especially when in use.

- When your phone is trying to make a connection to a webpage, app, etc. and you can see the spinning wheel or turning hourglass as it attempts to connect, put it down and step away.
 - Give it some distance as it tries to connect.
- Try to avoid streaming video or audio or downloading or sending large files when holding the phone.
 - Best to download them first when near a strong wi-fi signal and you are not near the device then watch/listen when on “Safety mode”.
- Use phones while they are on a table or desk vs holding in your hand whenever practical.
- Use blue light reducing/blocking glasses as often as possible.
- Have phone on table/desk when opening it to unlock or turn the power on, then:
 - Stand back a little to push the button(s), using keycode vs facial recognition.
 - Give it a moment once it’s on, standing back a bit, before using it. This allows time for its mad-search for a signal (wi-fi or cellular).
 - If unlocking from “Safety mode”, stand back for a moment.
- Avoid using cell phones when you are tired, run down or not feeling well.
 - Exposure to any environmental “toxin” when the body is more susceptible can increase symptoms and the weakened immune system in this state makes the body more susceptible to these foreign signals.
- Bluetooth
 - Do not use Bluetooth anything whenever possible.
 - Keep your Bluetooth switch to “off” in your settings whenever possible.
 - Wireless headphones, ear buds, wireless speakers, etc. emit high levels of EMFs.
 - Headphones which are connected with a cord are better.
 - Airtube headphones are best as they are designed to be extremely low to non-emitting (can be found online from various suppliers).
 - Use a USB connection in your car (and keep Bluetooth off) vs using your Bluetooth connection, especially with longer car rides.
- Smart watches
 - Consider not using them.
 - The author fully appreciates the data it allows people to access (i.e. sleep, exercise, steps, etc.) which can be helpful, motivating and in some cases necessary for reimbursement from companies who monitor healthy lifestyle choices.
 - It may be affecting sleep quality or exercise capacity, negatively impacting the very things being tracked.
 - Turn to “Safety mode”, disconnect from roaming, disconnect from Bluetooth, etc. when using when possible.
 - A lot of features will still work even when in these modes.
- Wi-fi routers
 - Stay as far from them as possible as often as you can.
 - Move them from more common sitting areas.
 - Keep them as far from where you sleep as possible.
 - Turn them off at night when going to bed!
 - Only if it is practical to be able to do (and being honest with oneself about the perceived “need” of keeping it on), but very important if at all possible.
- Computers
 - Desktops

- Use ethernet cables to hardwire vs wi-fi.
 - Wired keyboards and mouse vs wireless.
 - Use blue light reducing/blocking glasses as often as possible.
- Laptops
 - Use ethernet cables to hardwire vs wi-fi (if possible).
 - Wired keyboards and mouse vs wireless.
 - Use blue light reducing/blocking glasses as often as possible.
 - Keep them off your lap!
 - They do make laptop shields which can go underneath the laptop when on the lap which can help block EMFs (check the company to make sure it is reputable).
 - Even when using a laptop shield, it is still recommended to keep it off your lap.
 - Best to use on a counter or table.
 - Pillows or blankets limit EMFs only very minimally.
 - Not great anyway as they allow for the laptop to retain too much heat which is bad for it and makes it emit even more EMFs as it tries to cool itself off.
- Tablets
 - See laptop recommendations.
- Wireless headphones (i.e. ear buds, headphones)
 - Don't. Old school wired is best whenever able or practical.
 - There is also a EMF-free product called AirTubes which are wired ear buds or headsets that create space (i.e. distance) between the signal and the earbud or headset.
- Rechargeable products
 - Avoid being near them while they are charging, when in use and consider reducing the use of them in general.
 - Electric toothbrushes
 - They can emit as much EMFs as a microwave oven!
 - They can also affect stainless steel and other metal implants by promoting corrosion.
 - Cordless phones
 - Cordless speakers
 - Lighting and other decorative products
- Appliances
 - Consider pretty much anything—including the cord—that is plugged in as emitting some electrical field, even if powered off.
 - Turning the appliance on is what creates the magnetic field on top of the electrical field, allowing the energy field to “radiate” outward.
 - Best to unplug anything possible once it is turned off.
 - Those items with only two prongs without the third safety/ground prong are emitting more EMFs (typically) than three-prong plug.
 - Grasp the actual plug to unplug things vs grasping the cord.
 - The following charts should provide some guidelines about electrical/magnetic fields of some common appliances:

Typical electric field strengths measured near household appliances (at a distance of 30 cm)
(From: Federal Office for Radiation Safety, Germany 1999)

Electric appliance	Electric field strength (V/m)
Stereo receiver	180
Iron	120
Refrigerator	120
Mixer	100
Toaster	80
Hair dryer	80
Colour TV	60
Coffee machine	60
Vacuum cleaner	50
Electric oven	8
Light bulb	5
Guideline limit value	5000

Typical magnetic field strength of household appliances at various distances

Electric appliance	3 cm distance (μT)	30 cm distance (μT)	1 m distance (μT)
Hair dryer	6 - 2000	0.01 - 7	0.01 - 0.03
Electric shaver	15 - 1500	0.08 - 9	0.01 - 0.03
Vacuum cleaner	200 - 800	2 - 20	0.13 - 2
Fluorescent light	40 - 400	0.5 - 2	0.02 - 0.25
Microwave oven	73 - 200	4 - 8	0.25 - 0.6

Portable radio	16 - 56	1	< 0.01
Electric oven	1 - 50	0.15 - 0.5	0.01 - 0.04
Washing machine	0.8 - 50	0.15 - 3	0.01 - 0.15
Iron	8 - 30	0.12 - 0.3	0.01 - 0.03
Dishwasher	3.5 - 20	0.6 - 3	0.07 - 0.3
Computer	0.5 - 30	< 0.01	
Refrigerator	0.5 - 1.7	0.01 - 0.25	<0.01
Colour TV	2.5 - 50	0.04 - 2	0.01 - 0.15

- Hidden sources

- Household lighting can be a high source of EMFs as well.
 - Fluorescent lights, CFL and decorative lighting emit high levels.
 - Trying to find incandescent light bulbs or those that have lower EMF qualities are much better.
 - Dimmer switches also emit higher levels than regular switches.
- EMFs like to float in waves and will bounce off metal objects, some more than others.
 - Metal frame glasses can deflect EMFs to the head.
 - Metal springs in mattresses can deflect EMFs to the body.
 - Things that may be good for deflecting things away (i.e. metal roofs, EMF blocking clothes) can also hold some of those EMFs in.
 - Go to a low-EMF area of the house to put clothes on or even better, step outside barefoot on the ground to disperse EMFs out of the system before putting EMF-blocking clothes on.
- The higher the frequency of a signal, the more intensity with which it is trying to connect with something.
 - Imagine a rod being placed on a frozen pond and then slowly lifted and lowered. Now picture it being lifted and lowered with increasing speed and intensity. The “impact” on the surface, and the ripple affect into the water below it, changes. It not only breaks down the surface more intensely, it will also draw the attention of anything below the ice that much more as a foreign signal, disrupting the homeostasis of the living organisms below the surface.