

THE HAZARDS OF ELECTROMAGNETIC FIELDS (EMFS)

[AND WHY YOU SHOULD CARE]



Alison Main



Energy. Power. Connection. We use these words a lot to talk about our Paleo lifestyles. Our nutrition fuels our energy. Our workouts strengthen our power. Our community provides vital connection. But apply these words to electromagnetic fields (EMFs), and we unearth an emerging health issue that impacts our wellness and prosperity. There's a lot to learn, so consider this your EMF 101 intro course.

Why should we be concerned about EMF exposure?

You see it everywhere: “Free Wi-Fi.” You feel excited. Comforted. Relieved. You whip out your digital trifecta—smartphone, tablet, laptop. Yes! Connection! But there is mounting scientific evidence pointing to potentially harmful biological effects from this exact type of radiofrequency radiation.

As Paleo biohackers, we are committed to figuring out how the body can run most efficiently and reach homeostasis, and we do this through nutrition, movement, mindfulness and our environment—all based on the wisdom of our ancestors. We need only revisit John Durant's *The Paleo Manifesto* to intuit the problem with the deluge of EMFs in our world: “An organism is likely to thrive in a habitat that resembles its ancestral habitat.” And that includes our earth's

natural electromagnetism and energy fields.² But these overabundant man-made frequencies fly in the face of that environmental constant. So what is this fundamental change in our habitat's energy doing to our bioelectrical bodies?

How do EMFs harm?

We love our technology for its convenience, productivity and entertainment value, but the sobering reality is there are now hundreds of studies from independent scientists and health experts around the world indicating biological effects from both low-frequency and radiofrequency radiation. This type of non-ionizing, non-thermal radiation is not powerful enough to break electrons out of orbit, but it can nonetheless interfere with normal body processes. How exactly? EMFs are an external bodily

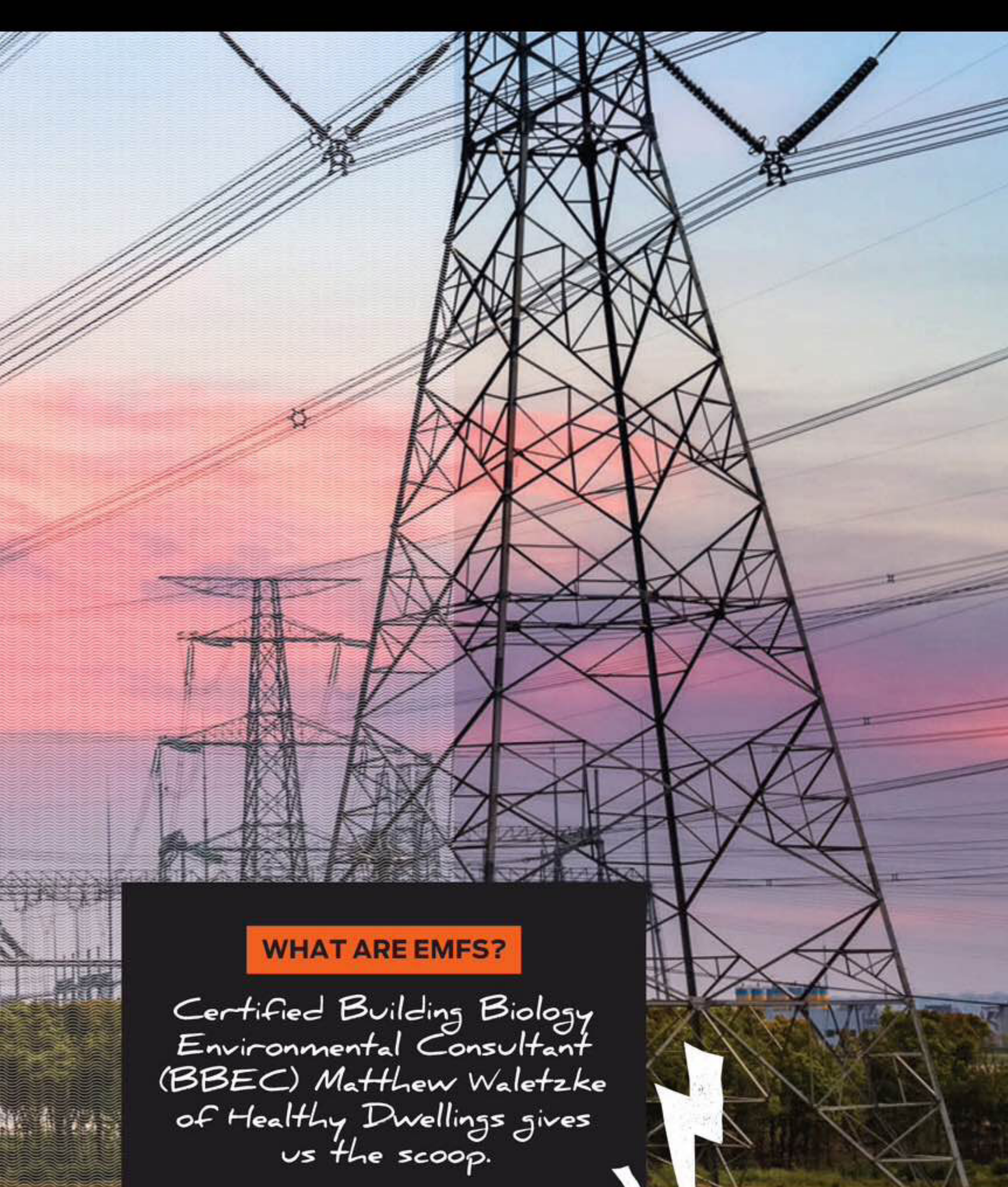
stressor like any other. There is a wealth of scientific evidence showing that even low levels of electromagnetic fields can activate the body's cellular stress response.⁵ This assault on the cells stimulates stress proteins,⁹ thereby disrupting biological balance. This all in turn prevents the body from healing, causes immune system imbalances, disrupts metabolic function and lowers disease resistance.³ Not good—since this is all the stuff we Paleo folks vow to overcome.

The list of associated health concerns with non-ionizing EMF exposure is significant, including (but not limited to): brain cancer; childhood and adult leukemia; leakage of the blood-brain barrier; genotoxic effects on DNA damage; cognitive and memory problems; increased risk of neurodegenerative disease; increased harm of chemical toxins due to combined exposure; low

sperm count; learning disorders and behavioral problems; increased allergic and inflammatory responses; insomnia; decreased melatonin production; and risk factors for childhood hyperactivity, learning and behavioral disorders.^{1,3} Alarming, to say the least.

But wait, aren't there EMF safety standards?

The question of EMF safety levels continues to spark a complex worldwide debate. Christopher Buonocore, BBEC, EMRS, of LifeSource Environmental Solutions explains why. In the U.S., the Federal Communications Commission (FCC) regulates wireless technologies, radio frequencies and all associated devices. Yet the current national safety standards for maximum allowable EMF exposures are set by the FCC at 10,000,000



WHAT ARE EMFS?

Certified Building Biology Environmental Consultant (BBEC) Matthew Waletzke of Healthy Dwellings gives us the scoop.

EMF STANDS FOR “ELECTROMAGNETIC FIELD.” We are surrounded by EM fields—both natural and man-made. These fields have two components: an electric field and a magnetic field. The strength of EMFs is measured in units of power density, and EMFs differ in frequency and wavelength. The spectrum of EM fields ranges from extremely low (e.g., your blender’s power cord) to very high (e.g., gamma rays).

RADIOFREQUENCY (RF) refers to invisible, man-made wireless technologies, such as wireless routers, cellphones, cell towers, cordless phones, smart meters, Wi-Fi-enabled devices, e-readers and wearable smart tech.

LOW-FREQUENCY/EXTREMELY LOW-FREQUENCY (LF/ELF) is electricity generated from power lines, transformers and electrical appliances.

DIRTY ELECTRICITY refers to contaminated signals, harmonics or high-frequency micro-surges that ride on top of our clean electrical current. Think about this like a distortion. Examples include improper wiring, the power grid, fluorescent lights, LED lights and dimmer switches.

$\mu\text{W}/\text{m}^2$ —that’s literally millions of times higher than the 3 to 6 $\mu\text{W}/\text{m}^2$ precautionary level presented by the 2012 BioInitiative Report.¹

So why is the FCC’s level so high? Because they based their recommendations on safety standards issued by the American National Standards Institute (ANSI), the Institute of Electrical and Electronics Engineers, Inc. (IEEE), and the National Council on Radiation Protection and Measurements (NCRP).¹⁰ These organizations only considered *thermal* effects (i.e., heating) on the body when setting exposure limits.³ Yet, as Mr. Buonocore explains, “there is a substantial amount of peer-reviewed research published nationally and internationally indicating that much lower *non-thermal* levels have dramatic biological effects.” And it’s at these non-thermal levels where we find our wireless toys and electronic devices.

Not to mention, U.S. federal regulations did not consider cumulative or multiple overlapping exposures—a serious problem when most of us spend our days glued to a cellphone, while typing on a laptop, all connected on a wireless network, as we sit under LED lights, drive a car synced with Bluetooth, and sleep in a house with a smart meter, perhaps with a power transformer outside the window. For the first time in the history of man, we are surrounded by omnipresent, entire-body exposures to artificial electromagnetic frequencies in our homes, communities, schools, businesses, restaurants, transportation systems and public infrastructures.

In 2011, the International Agency for Research on Cancer (IARC), part of the World Health Organization (WHO), published a risk assessment guideline that raised radiofrequency radiation to “Group 2B: possibly carcinogenic to humans”—meaning it could potentially be cancerous.

But is anyone actually sick from this yet?

There is a small, but growing, percentage of the world’s population now suffering from a multisystemic condition called electrohypersensitivity (EHS). Individuals with EHS experience a wide gamut of physiological manifestations while in the presence of electromagnetic fields (even at extremely weak power densities). Symptoms of EHS worsen with dose and duration of EMF exposure and include headaches, heart palpitations, chest pains, skin

"A friend of mine once said, 'It's the new smoking,' and proceeded to pull out an old print advertisement with the headline 'Doctors Smoke Camels.'"

(BBEC)—Christopher Buonocore, BBEC, EMRS, LifeSource Environmental Solutions

rashes, disturbed sleep, burning/tingling/numbness, muscle aches, joint pains, nausea, restless leg syndrome, tinnitus, vertigo, brain fog, memory problems, cognitive dysfunction and more.^{4,6}

When this condition is unmanaged, individuals with EHS become significantly more sensitive to increasingly smaller and shorter intensities of EMF stimuli. Currently, management of EHS is dependent upon strict avoidance of EMFs and other environmental toxins. An individual will usually go into remission once living in a low-EMF and chemically pure environment. However, it remains unclear if full recovery is possible, once the individual re-enters an EMF-laden area.⁶

While EHS is not yet accepted as a legal disability in the U.S., several countries classify it as a "functional impairment," and the WHO states that "the symptoms are certainly real... EHS can be a disabling problem for the affected individual."¹¹ While exact numbers are hard to pinpoint at this stage, it is estimated that roughly 3 to 5 percent of the world's population currently has EHS, with approximately 35 to 50 percent mildly to moderately affected by EMF pollution.^{4,6}

The most severely debilitating cases of EHS require the individual to break from our high-tech society and live entirely off the grid. These so-called "EMF refugees" seek solace in remote rural locations and rapidly disappearing radiofrequency-free "white zones" around the world—no easy task given the expansion of community WiMAX and cellular networks, as well as the international rollout of the smart grid.

What we should all learn as a takeaway from EHS is this: These highly sensitive individuals may be the proverbial "canaries in the coal mine." If they can sense physical danger around our wireless technologies and electrical fields, maybe we should all heed the warning, as well.

So, what can we do about this?


If we're Paleo, that means we bypass the sugary-sweet, neon-colored candies in the grocery store. We skip the industrial foods in favor of our own

organically grown, locally sourced, unprocessed meals. Retailers may line their shelves with chemically infused, mega-marketed industrial foods, personal care and home products, but that doesn't mean we have to buy them, stock our pantries with them or use them. So, the same self-mandated bio-individual control can be implemented with EMF devices and wireless technologies. Just because it's everywhere, just because "everyone else is doing it," and just because these products don't come with a literal skull and crossbones label, doesn't mean any of this is actually healthy for us, nor does it mean that we "should" overindulge when merely given the opportunity.

"Sensitive or not, anyone can benefit from reducing these EMFs in the home environment. It's a holistic health perspective... EMF is a stressor on the body. It's like chemicals in the environment, or the stress on our jobs, you want to create a space where all of those stressors are as low as possible, and that frees the body up to do what it is supposed to do."

—Matthew Waletzke, BBEC, Healthy Dwellings

Good (and bad) vibrations

The seductive lure of modern technology keeps us in this constant, unnatural feed cycle of EMF hyper-exposure. As MIT Professor Sherry Turkle writes in *Reclaiming Conversation*, "We turn to our phones instead of each other. We readily admit we would rather send an electronic message or mail than commit to a face-to-face meeting or a telephone call."⁷ Sure, our digital technologies may be harming our interpersonal relationships, but what if they're also harming our bodies? We are here to nourish ourselves, in mind, body and spirit. We may be living in the "smart tech" era, but our ancestors had some mega-smarts of their own. It's time we disconnect from the constant barrage of artificial EMFs, and reconnect to the natural rhythms and vibrations our Earth intended. There is a difference between surviving and thriving. And we want to thrive. 



TIPS & TRICKS

GET SMART ABOUT YOUR SMARTPHONE.

- 1 Never hold your smartphone next to your head. When talking, use a wired air tube headset or speaker option, and place the phone away from your body.
- 2 Only use your smartphone when you have a good signal. The weaker the signal, the more radiofrequency is used to connect, which increases your exposure.
- 3 Text more than talk. Smartphones use less radiation to send a text versus talking.
- 4 Never put your smartphone in your pocket or directly on your body. And if you must, then keep it turned off.
- 5 Use a corded landline at home instead of your smartphone when making calls.
- 6 Pregnant women should keep their smartphones (and all wireless devices) away from their abdomen. New parents? Move that device away from your baby's head and body.
- 7 Meet up IRL! Drop your smartphone, go outside and connect in person when you can.

Reference:
Davis D. *Disconnect: The Truth About Cell Phone Radiation*. Writers House LLC, 2013.

Alison Main is a freelance writer with a focus on natural living, clinical nutrition, and EMF safety. Echoing her own wellness journey, she is passionate about helping others heal from environmental illness through holistic tenets and Paleo philosophies. UncommonAlchemy.me

REFERENCES

1. Sage C, Carpenter DO. "BioInitiative Report: A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Radiation." BioInitiative Working Group. 2012. <http://www.bioinitiative.org/>
2. Durant, J. *The Paleo Manifesto: Ancient Wisdom for Lifelong Health*. Harmony Books, 2013.
3. Blank M. *Overpowered: What Science Tells Us About the Dangers of Cell Phones and Other WiFi-Age Devices*. Seven Stories Press, 2014.
4. Havas M. "Radiation from wireless technology affects the blood, the heart, and the autonomic nervous

- system." *Reviews on Environmental Health*. 28.2-3 (2013): 75-84. doi: 10.1515/reveh-2013-0004.
5. Blank M, Goodman R. "Electromagnetic fields stress living cells." *Pathophysiology*. 16 (2009): 71-8.
6. Mallery-Blythe, E. "Electromagnetic Hypersensitivity A Summary." 2014. <http://electromagnetichealth.org/electromagnetic-health-blog/ehs-mallery-blythe/>
7. Turkle S. *Reclaiming Conversation: The Power of Talk in a Digital Age*. Penguin Press, 2015.
8. Safe Living Technologies Inc. "EMR Exposure Guidelines." <http://www.slt.co/Education/EMR-ExposureGuidelines.aspx>

9. Buchner K, Eger, H. "Changes of Clinically Important Neurotransmitters under the Influence of Modulated RF Fields: A Long-term Study under Real-life Conditions." *Umwelt-Medizin-Gesellschaft*. 24.1 (2011): 44-57.
10. Federal Communications Commission. "Radiofrequency Safety." <https://www.fcc.gov/general/radio-frequency-safety-0>
11. World Health Organization (WHO). "Electromagnetic Fields and Public Health. Electromagnetic hypersensitivity." <http://www.who.int/peh-emf/publications/facts/fs296/en/>