



PHILOSOPHY

## Electromagnetic Hypersensitivity and the Science of EMFs

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*Editor's Note:* This article is an excerpt from Brandon's latest book, "Cancer and EMF Radiation."

Movement of planet Earth's molten iron core generates a weak static geomagnetic field that varies in strength over millennia but currently ranges from 0.25 to 0.65 gauss. This is the native field in which all life has evolved. The field also comes in handy when using a compass to point the way.

Understanding our place in nature's electromagnetic field environment took an interesting turn with the discovery of the Schumann resonances. In 1952, scientist Winfried Schumann discovered that the Earth itself has a native frequency of 7.8 hertz (cycles per second), and higher harmonics thereof, that are thought to be generated by lightning strikes in the airspace between Earth's surface and the ionosphere. Lightning is always occurring somewhere on the planet, and the collective effect is the pulse of Mother Earth.

### Alpha Wave Pattern

Curiously enough, when the human brain is in a relaxed and meditative state, it operates around this same frequency (known as an alpha wave pattern), as measured with an electroencephalogram. This may not be a coincidence. Traditional Chinese medicine is one of many ancient wisdom traditions that posits humans are energetically connected to the planet. It is as if our nervous system is entrained to the heartbeat of Mother Earth.



Living things also emit an electromagnetic field. The human biofield was first measured in 1936 by Yale scientist and researcher Harold Saxton Burr when he and his colleagues used a voltmeter to measure the electrical potential of the human body. His work went on to define the field of bioelectronics, eventually leading to the development of the pacemaker.

In addition to the frequency and harmonics of the Schumann resonances and the biofield of the human body, we live in an invisible sea of EMFs, both artificial and natural. Life could not exist on planet Earth without the geomagnetic field that envelopes our atmosphere like a cell membrane, shielding us from solar wind coursing off the sun.

#### Natural Radiation

Humans have evolved alongside other natural sources of radiation, including limited contact with radioactive elements found in natural deposits scattered across the planet. The atomic age created a demand for and mining of these radioactive elements, such as uranium, bringing these harmful compounds in close proximity to large segments of the population.

Moving into the computer age, a multitude of technologies have been developed that blanket the Earth with novel and non-native EMF frequencies of varying intensities, ranging from high-powered satellites to cordless phones and Wi-Fi routers broadcasting in our homes. With so much money to be made, these technologies were integrated into society without rigorous scientific scrutiny. Only recently have long-term studies been conducted on the health consequences of EMFs.

#### The Nature of Electromagnetic Fields

Electromagnetic fields are invisible, inaudible waves categorized by their oscillation over a period of time (frequency) and the intensity with which that wave is emitted (power). To give a household example, a lightbulb carries a frequency of 50-60 hertz (Hz). The electrical potential of this

frequency as it moves through the electrical grid is expressed as voltage, while the power is measured in watts. A lightbulb is therefore a device that takes 120 volts of electrical energy and transforms it into light and heat.

Early technologies that harness electromagnetic radiation include radio and radar. These are long waves of low frequency that can travel for miles. Newer technologies include smaller-wave, higher-frequency microwave devices such as mobile phones, wireless networks, and microwave ovens. These devices vary in power depending on the need, from higher-powered cellphone towers transmitting data over many miles to a handheld Wi-Fi device that transmits within a few hundred yards.

The complete range of frequencies, encompassing both natural and artificial, is known as the electromagnetic spectrum. Within this spectrum, EMFs can be divided into two broad categories, ionizing and nonionizing. Ionizing waves cause unequivocal damage to human biology. This includes X-ray and gamma-ray radiation.

Medical science has learned to leverage small doses of these waves for diagnostic and treatment purposes, but excessive exposure can irradiate tissue, damage the DNA in the nucleus of cells, and lead to malignant cell mutation. Catastrophic examples of this were observed after fallout from the atomic bombing of Japan as well as the nuclear disasters at Chernobyl and Fukushima.

### Negative Health Effects

It is clear that we must avoid contact with ionizing radiation except for specific and controlled instances. The question then is, should we limit our exposure to technology that emits nonionizing radiation? Furthermore, if we can't limit exposure to EMFs from electrical devices such as mobile phones, cordless phones, and Wi-Fi networks, can we protect ourselves from negative health effects?

Although they can be precisely measured, there is not a mature consensus to what degree nonionizing EMFs are harmful. Further complicating the problem, differences in sensitivity between individuals is unacknowledged. One person may be able to operate a laptop while talking on a mobile phone while sitting under an array of fluorescent lights and not, seemingly, register any ill effects.

On the other hand, there are those who are sensitive to EMFs and may, for example, develop a headache after a long conversation on a mobile phone. There are still others who are hypersensitive to EMFs and feel a buzzing sensation travel through the arms when holding an electrical device.

What does it mean to be hypersensitive to EMFs, and how can those of us who are not interpret that experience? Having worked with this population, I can verify that their experience is real. As a clinician, I would describe these individuals as having delicate nervous systems. Tingling in the limbs, migraines, heart palpitations—these symptoms are associated with aberrations in nervous system function, and they occur much more commonly in these hypersensitive individuals, analogous to a patient with a sensitive gut experiencing symptoms of irritable bowel syndrome from the slightest dietary irritation.

For those who can reliably report symptoms of electromagnetic hypersensitivity, this is a very real issue that is being explored in the research literature as a novel neurological syndrome.<sup>1</sup>

We are left wondering if these individuals are the canaries in the coal mine. Though they may be

experiencing effects from a low dose of electromagnetic radiation, might we also, unknowingly, be suffering health consequences? Do these effects accumulate over time?

### *Reference*

1. McCarty DE, et al. "Electromagnetic Hypersensitivity: Evidence for a Novel Neurological Syndrome." *International Journal of Neuroscience*, Nov 2011; 121(12): 670-76.

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