

Frequencies that Heal and Frequencies that Kill

A new perspective on how EMR exposure affects human physiology

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Controversy is increasing regarding health risks of cell phone usage and exposure to the ever increasing ElectroMagnetic Radiation (EMR) permeating our environment and our bodies. A recent study¹ in Brazil found exposure to EMR from cell phone towers increased health risks for those living or working near cellular towers. Current literature and recent EMR case studies like the one from Brazil are focused on the epidemiological data of how, when and where, rather than the underlying causes. Epidemiological evidence can only show a correlation with a higher incidence of disease in the population exposed to a particular risk factor. The higher the correlation the more certain the association, but it cannot prove the cause. While evidence mounts regarding exposure to EMR, there is no consensus as to how it affects human physiology. As long as there is disagreement on the etiology there will be no consensus on how to correct the problem. This paper explores a new etiology of EMR exposure, how we arrived at this situation, how it can be corrected and what you can do to mitigate exposure to EMR with Rhythmedics® Clarius™.

Have you ever heard a cell phone interfere with audio equipment? It sounds like bursts of noise when an active cell phone is near a radio or even an MP3 player or Public Address system. Now ask yourself, “How is it possible for something that isn’t even a radio to translate cellular signals into these audible bursts?” The answer is simple and central to understanding the health problem. Cell phones, like nearly all wireless devices, use some form of frequency hopping to better utilize available radio spectrum, reduce interference and use lower power. The wireless carrier frequency is usually in the hundreds of megahertz to gigahertz range and at the low power emitted by cell phones the radio waves should pass harmlessly through us.

So why does epidemiological evidence show a higher risk associated with exposure to these radio waves? The fact you can hear audible bursts with an audio amplifier that isn’t a radio receiver, or a receiver not even tuned to the same carrier frequency, gets to the crux of the issue. The culprit is the interval at which the frequency hopping occurs, and not the megahertz to gigahertz carrier frequency of the transmitted bursts. The frequency hopping interval, I am using ‘interval’ instead of ‘frequency’ to avoid confusion with the carrier frequencies, is in the audible range. Our bodies are sensitive to frequencies we can hear, and as the title of this paper states, there are frequencies that heal and frequencies that kill. It’s as basic as how music affects us. When musical instruments are out of tune or out of harmony with each other the result is agitating noise. And when we hear such a cacophony of dissonance, we turn it off or leave the room.

But what happens when we are exposed to other forms of energy in the same range as music, which we cannot hear? With the plethora of wireless emissions surrounding us we are literally being bombarded with inaudible energies in the audible range. These energies have direct effects upon our bodies, and it can be proved. NuTesla conducted brainwave monitoring of individuals while awake and asleep to see if entrainment occurs with inaudible electromagnetic (EM) pulses. Brainwave entrainment occurs when a person is exposed to repeating auditory or visual signals. Watching the flickering flames in a campfire, or even the repetitive drips of a leaking faucet can entrance us. Highway hypnosis occurs when a driver is concentrating on the road and the regular rhythm of repeating white lane dividers scrolling ahead and beneath the car causes him or her to become entranced. Light and Sound Machines to help people attain states of relaxation is another example of sensory created entrainment. Monitoring of a subject's brainwave patterns revealed the frequency of the external stimulus, whether visual, auditory or inaudible EM pulses, is mimicked by the subject's predominant brainwaves.

Brainwave entrainment from inaudible EM pulses is just the first part of the problem. The real issue is how the resulting entrainment affects other physiological systems in people and animals. NuTesla's studies revealed brainwave entrainment has an effect upon our biological clock. The Suprachiasmatic Nuclei is a small organ the size of a grain of rice in the midline of the brain, and is the central clock for our bodies and for all mammals. It regulates hormone productions and other biological processes. Dr. Franz Halberg, the father of chronobiologyⁱⁱ who coined the term "Circadian Rhythm" in the 1950's, discovered strong electromagnetic signals affected the body's internal rhythm and could reset someone's clock. Dr. Halberg's findings prompted this author to hypothesize brainwave entrainment was the mechanism by which EMR influenced the SCN. At the time of his discovery X-Rays were one of the only sources of EMR strong enough to reset your clock. If you woke up at 7AM and at 10AM you received a chest X-Ray, your body's clock would be reset to 7AM. You just experienced 3 hours of unintentional jet-lag from the X-Ray exposure and that night you found it difficult to fall asleep at your regular bedtime and just attributed it to anxiety over the X-Ray. After a few nights your clock is restored to its regular rhythm and sleep returns.

Now fast-forward to 2013 and a time when EMR is so prevalent we are constantly surrounded by it and often carry the emitters on ourselves. This sea of EMR in which we live can interfere with our internal timekeeper and disrupt our sleep. And an irregular clock means other problems as well. Dr. Halberg also discovered something that has gone largely unrecognized by today's scientists and doctors, and that is the effect of our clock on our body's production of proteins it needs for repair and growth. The process of transcription, where the cells transcribe sequences of DNA to create the amino acid strings that form all the proteins making up our body, is not a continuous process. Transcription occurs principally at the start and upswing of each of our body's ultradian rhythms, the shorter rhythmic cycles that we experience day and night.

Most people are familiar with the classic brainwave patterns often drawn as a series of 5 or 6 waves with the crests representing dreaming periods and the troughs representing deep sleep. Each complete wave is one ultradian cycle and they average 90 minutes in length. Ultradian cycles even occur while we're awake, though most people aren't aware we experience these waking cycles. That mid-morning slump and another in the early afternoon are outward indications of the inward ultradian cycles of our body and not just the result of digestion as we've been led to believe.

Dr. Halberg's discovery of critical biological processes being regulated by the SCN led him to propose medications include a time table of when it should be taken for optimum effectiveness. Today only a few medications include instructions as to when they should be taken, and we've been told it's because taking some drugs on an empty stomach can cause nausea or on a full stomach can impede its absorption. While the statements are generally valid, they belie the real underlying reason, and one can assume the only reason we aren't told why is because it would take too much of the doctor's or pharmacist's time to explain.

Connecting EMR disruption of our biological clock with the production of proteins only occurring at the beginning of ultradian rhythms presents a new cause for the health risks associated with exposure to EMR. When EMR interferes with our clock and we are unable to produce the proteins our bodies need for repair and growth, we are compromising our ability to protect ourselves from aberrant cellular mutations. If cancer cells naturally occur in our bodies, and our bodies are normally destroying these mutations as they occur, then if we interfere with our ability to produce the defenders to the cancers cells, we are leaving ourselves open for attack

Studies that show no clear evidence of EMR causing cancer or other illnesses are likely accurate and correct. The true underlying cause of health risks is EMR exposure preventing our bodies from producing the proteins needed to respond to these threats, regardless of how the mutations occurred. This problem is correctable, but we need to start asking the right questions and to do that we need to understand how we got here.

Electromedicine, the use of electricity in therapeutic settings, started over 2,000 years ago when arthritis sufferers were told to stand in shallow water where electric eels swam to reduce pain. It wasn't until the end of the 1700's when Luigi Galvani, an Italian anatomist, discovered the muscles of dissected frogs twitched whenever they came in contact with his scalpel while lying in a metal dissecting tray. He concluded the twitching was evidence for the existence of "animal magnetism or electricity," and was later shown to be erroneous by another Italian contemporary, Volta who was creating some of the first batteries, and for whom the electrical potential 'volt' is named in honor. However, Galvani was ultimately correct in the existence of an electrical potential in all living cells, just that it was not sufficient to cause the twitching he had observed.

By the end of the 1800's Electromedicine has become one of the mainstays of medical treatment. Nikola Tesla on November 17, 1898, writing in *The Electrical Engineer*, Vol. XXVI., No. 550, about therapeutic applications of electricity, reported, *"One of the early observed and remarkable features of the high frequency currents, and one which was chiefly of interest to the physician, was their apparent harmlessness which made it possible to pass relatively great amounts of electrical energy through the body of a person without causing pain or serious discomfort. This peculiarity which, together with other mostly unlooked-for properties of these currents I had the honor to bring to the attention of scientific men first in an article in a technical journal in February, 1891, and in subsequent contributions to scientific societies, made it at once evident that these currents would lend themselves particularly to electro-therapeutic uses."*

By the 1890s most therapeutic applications of electricity were through an inductive connection, rather than a direct connection between the electrical source and the body, though such were used. This inductive connection involved generating high frequencies and high voltages to create a large electrical field. Nikola Tesla's discoveries of using condensers (capacitors) with his coils and a spark gap to create high frequency oscillations of a very high potential, or voltage, were in general therapeutic use by 1900. A French physician and physicist, D'Arsonval, had been using Tesla's oscillators long before 1900. After D'Arsonval received several awards by the government of France for therapeutic use of electrical currents Tesla traveled to Paris in 1892 to confront him. D'Arsonval freely acknowledged his use of Tesla's oscillators in his work and it was simply the result of the French media failing to publish the whole story and wanting to look good in the world's eye. Dr. D'Arsonval validated the therapeutic benefits of Electromedicine.

Tesla freely acknowledged that while he understood how to create these currents for applying to the human body, it *"... remained for the physician to investigate the specific actions on the organism and indicate proper methods of treatment..."* Using Tesla's neon tube and radio, Dr. Royal Raymond Rife in the early 1900's experimented with specific radio frequencies and modulated, or pulsed, them and studied their effects on biological samples under an extremely powerful microscope he invented. Dr. Rife discovered certain frequencies would disrupt the cellular structure of pathogens and even viruses and cancers killing them while not harming healthy tissues. Dr. Rife's patients had a remarkably high cure rate which got the attention of the American Medical Association, then a relatively new organization that had incorporated in 1897.

In the early 1900s medical practice in America was not as highly regulated as it is today and there was little standardization in training and education. The Flexner report of 1910ⁱⁱⁱ, which was funded heavily by the Rockefeller family who had large investments in the pharmaceutical industry, was written to identify specific measures to correct these problems. One of the findings was to only recognize scientifically proven medical procedures, and rightfully so as there were 'medical practitioners' selling 'snake-oil' cures. Tesla was relying on physicians to explain how

these currents of high voltage affected the body and other than Dr. Royal Rife and a few others, most doctors of his time were unable to do so. Physicians speak Latin and engineers speak Greek, relatively speaking, and there was no cross-training between the two disciplines.

As a result, Electromedicine was declared as quackery and by 1940 Dr. Rife, who refused to sell his inventions to the AMA, had been discredited and his research and instruments seized by the government. The electrical engineers who designed and constructed Electromedicine devices were forced to abandon them. If doctors couldn't prove how the instruments affected the body then why be concerned about how they may harm, other than in immediately observable ways such as electrocution or the heating of tissues by ionization? As a result, over the next decades the engineering concepts used to create healing instruments were largely abandoned and engineers concentrated on ways to reduce manufacturing costs.

By the 1950s the only recognized uses of electricity in medicine were diagnostic applications, principally for imaging. Nuclear Magnetic Resonance Imaging^{iv} was invented in 1950 and proved to be far safer than X-rays. Nuclear was dropped from the name as patients thought it referred to nuclear bombs rather than the nucleus of the cells it was imaging. MRI operates by placing the patient in a strong magnetic field, measured in Tesla's in honor of Nikola Tesla. This magnetic field polarizes the atoms in the body causing them to line up. An RF pulse tuned to the resonant frequency of hydrogen atoms for a given magnetic field strength is then transmitted to a small area of the body. The tuned energy is absorbed by the hydrogen atoms in that area exciting their electrons into a higher orbit around their nucleus. When the RF pulse is turned off the electrons 'fall' back to their normal orbit and release the stored energy which is captured by the MRI receiver. Multiple pulses in adjacent areas are then received and an image is computed. MRI actually provides an image of the energy in the body, rather than an image of the tissues itself, as an X-Ray or CT-Scan does. MRI's are many times safer than an X-Ray or CT-Scan, as there is significantly less energy transmitted to or through the body.

Electromedicine began its reemergence in 1972, almost two hundred years after Galvani, when the first patent^v was issued for a Transcutaneous Electrical Nerve Stimulator (TENS). These devices provide electric pulses directly to the skin to repeatedly contract and relax muscles. TENS units can overwhelm the Central Nervous System (CNS) and effectively interrupt the pain signals being sent to the brain. TENS have since been used for muscle strengthening and building and are readily available, though their purchase and use requires a physician's prescription.

In 1983 Dr. Robert Becker published his findings with regard to the regenerative abilities of electricity applied directly to the body^{vi}. Dr. Becker had observed the reversal of bio-electrical current emanating during regeneration of an amputated appendage in salamanders, as opposed to

the diminishing of the bio-electric current during the healing of an amputated appendage in frogs and mice. He theorized that by supplanting the bio-electric current in frog and mice with an external DC source that amputated appendages could be regenerated and successfully demonstrated this. Amazing as this sounds, ‘modern’ medicine has generally ignored the dramatic implications of his findings.

Björn E. W. Nordenström of Sweden proposed a method of treating cancer using his theory of biologically closed electric circuits (BCEC)^{vii} by inserting an electrode directly into cancerous tissues and causing a current to flow to literally kill the cancer cells. Known as electrochemotherapy (EChT), the AMA rejected his proposals in 1986 and Dr. Nordenström worked instead with China which has seen a marked improvement in cancer treatments using this method.

SCENAR, which stands for Self Controlled Energy Neuro Adaptive Regulator^{viii}, was ostensibly developed for the Russian Space program, and was the first Electromedicine instrument to reemerge that applies specific frequencies and waveforms through direct contact to the body like TENS, but at a lower power. This has expanded into a field of Microcurrent Electrotherapy, or MET, which presents very low currents to the body as specific therapeutic frequencies. MET gained popularity in 1997 when a chiropractor in Portland, Oregon acquired an abandoned Electromedicine instrument from the 1950s and began using it her practice.

Interestingly, Dr. Rife’s work of using specific frequencies to destroy viruses has since been revitalized in 2006 and applied by Dr. KT Tsen^{ix} at Arizona State University Tempe using coherent laser light to treat blood from patients as it is cycled through a dialysis machine and has successfully demonstrating the ability to safely destroy bacterial microphages.

The reemergence of frequency based therapies illustrates frequencies have a direct effect on living organisms, whether for good or ill. If frequencies can heal then frequencies can kill, and that’s what today’s engineers have lost since the demise of Electromedicine. We need to make changes in the designs of electronics to combat the results of turning a deaf ear for more than half a century to its benefits and thus the ignoring the risks. Here is an example of how simple this can be.

Many bedside digital clocks have a florescent display as is common on many consumer appliances. The engineers designed the display and driving circuitry to reduce the number of components required and selected a multiplexing frequency that was above the flicker range for most people, usually 50 or 60 hertz or some multiple. The display looks appealing while keeping costs and complexity down. Unfortunately, we are sensitive to frequencies in the audible range used to multiplex the display segments and since there has previously been no correlation between frequencies and health most bedside digital clock displays can interfere with sleep. Someone figured this out a few years ago and starting modifying inexpensive bedside digital

clocks and selling them for \$400, claiming they emitted healthy energies, and all they had to do was change the value of a 1 cent component to use a healthy multiplexing frequency. If the manufacturers of electronic appliances with florescent digital displays would use any one of a number of healthy frequencies for multiplexing digital displays, they would emit healthy energies to support sleep, not disturb it.

This same concept can be applied to everything from compact florescent lamps to wireless devices. Any device with a display from calculators to laptops to Televisions, all use a scan rate to refresh their display. Interestingly, 72 Hertz as is now being used in many digital displays happens to be a healthy “Rife” frequency, unlike 50 or 60 Hertz. For wireless devices the frequency hopping interval needs to change. That change would affect every wireless device, so even when wireless engineers acknowledge the problem it will take a long time to implement the corrections.

Beyond educating people to the source of the problem, manufacturers of electronics are not likely to initiate such a change for fear of consumers taking it as an admission they knew the previous versions were not safe, so there may need to be some sort of amnesty. But could you imagine what would happen if even one cell phone manufacturer pushed for this and offered healthy cell phones?

There is a wrinkle in making this change, because of the phenomenon of frequency fatigue. This occurs when we’re exposed to any one frequency for extended periods of time, even for more than several minutes. The best way to avoid frequency fatigue is to change the frequency every few minutes following a bell-curve format to mimic ultradian rhythms. If a device uses frequencies in the range of from 0 Hertz to 20,000 Hertz, and the frequency or frequencies persist then they should first be selected from the range of healthy ‘Rife’ frequencies^x and they should be presented in a format to mimic ultradian rhythms, following a bell-curve over a 90 minute period.

Until engineers start designing healthiness back into their systems we need something more than simply avoidance and shielding from these sources of EMR. NuTesla’s patented instruments are based upon the resonant energy discoveries of Nikola Tesla and Dr. Royal Rife, combined with the biological clock discoveries of Dr. Franz Halberg to help restore natural circadian functioning while interrupting harmful EMR. Using the discoveries of Dr. Jean Claude Perez and Fibonacci sequences within our DNA, NuTesla selected specific quartz crystals cut to reproduce a Fibonacci number fundamental frequency.

Clarius™ is NuTesla’s premier instrument^{xi} for clearing the harmful EMR from your work or living space. Unlike passive devices, Clarius actively ameliorates the effects of EMR by generating a torus (donut) shaped field of naturally generated ultradian rhythm frequencies called Bio-Pulses™. The immediate field is over 6 feet in diameter and the longer Clarius operates in

an area the wider the field becomes. The Bio-Pulses are also emitted over the power line connected to Clarius and these travel into any directly connected equipment to further expand the field of effectiveness. Clarius features 6 user selected ultradian programs to support whatever level of attention or relaxation you need during your waking hours. Clarius can also be used in a vehicle.

NuTesla's brainwave monitoring during both sleep and waking periods has shown EMR can disrupt the Suprachiasmatic Nuclei (SCN), which is the central clock for our bodies' biological functions. Disrupting the SCN has other affects as well, such as fatigue, muscle and joint aches, irritability, reduced metabolic rate leading to increased body weight and its associated health risks and difficulty staying focused and on task. In the workplace these lead to an increase in sick days and healthcare costs with more personal time-off and reduced productivity.

The two international groups involved in protecting the public from EMR are The World Health Organization (WHO) and The International Commission on Non-Ionizing Radiation Protection^{xii} (ICNIRP). WHO established the International EMF^{xiii} Project in 1996 to assess the scientific evidence of possible health effects of EMF in the frequency range from 0 to 300 GHz. ICNIRP is a body of independent scientific experts addressing possible adverse effects on human health of exposure to non-ionizing radiation through disseminating information and advice on potential health hazards and works with WHO.

ⁱ Sci Total Environ. 2011 Sep 1;409(19):3649-65. doi: 10.1016/j.scitotenv.2011.05.051. Epub 2011 Jul 13. Mortality by neoplasia and cellular telephone base stations in the Belo Horizonte municipality, Minas Gerais state, Brazil <http://www.ncbi.nlm.nih.gov/pubmed/21741680>

ⁱⁱ Transdisciplinary unifying implications of circadian findings in the 1950s Franz Halberg Published: 29 October 2003 Journal of Circadian Rhythms 2003, 1:2 <http://www.JCircadianRhythms.com/content/1/1/2>

ⁱⁱⁱ Kirsch DL and Lerner FN. Pain Management: A Practical Guide for Clinicians (6th Ed). Weiner R (ed.) *Electromedicine: the Other Side of Physiology*. Vol 2, Chapter 60.

^{iv} Carr, Herman Y. (July 2004). "Field Gradients in Early MRI". *Physics Today*(American Institute of Physics) **57**

^v US Patent 3,817,254 [Donald D. Maurer](#) file 1972 – Medtronics

^{vi} Vibrational Medicine, Richard Gerber, M.D. 3rd Ed. Pgs 95-97

^{vii} Nordenstrom, B.E.W. (1989), Electrochemical treatment of Cancer. Variable response to anodic and cathodic fields. *American Journal of Clinical Oncology* (CCT), 12. 530-36.

^{viii} <http://www.scenar.ru/en/>

^{ix} Inactivation of viruses by coherent excitations with a low power visible femtosecond laser KT Tsen Published: 5 June 2007 Virology Journal 2007, 4:50 doi:10.1186/1743-422X-4-50 <http://www.virologyj.com/content/4/1/50>

^x <http://electroherbalism.com/Bioelectronics/FrequenciesandAnecdotes/index.htm>

^{xi} <http://SimplyClearing.com>

^{xii} <http://icnirp.net>

^{xiii} <http://www.who.int/peh-emf/en/>