# Electromagnetic Radiation, Mass Insanity, and the New World Order

by Jeremy James



The Luciferian cabal who are overseeing the implementation of the New World Order are following a plan. This is not man's plan, but Satan's. He wants his 'anointed son', the figure we know as the Antichrist, to rule over the entire earth in his name.

They are striving, with great success, to concentrate more and more power in the hands of a centrally co-ordinated Elite. The ultimate goal is a world government capable of exercising totalitarian control over all 'nations'. In reality, nations as we currently understand them will cease to exist. So too will all the freedoms that we traditionally associate with democracy and free-market capitalism.

In order to do this, they must substantially reconfigure the way society has been organized over the past three hundred years. This will include the suppression of all values and social practices based on the Bible. While much of this change to date has been incremental, the overall pace of change is increasing and we are rapidly approaching the point where a calamitous transitional shift will occur and any remaining elements of the 'old' world order will be thoroughly purged.

## The Hidden Hand

Despite all that is happening, the general public has failed to see that society is being reshaped in this way. The hidden hand has hidden itself extremely well. Virtually everyone still believes that world events unfold in a haphazard manner and that the needs and expectations of mankind will continue to be met through ongoing technological progress, international co-operation, and rational decision-making.

This is a fairy-tale, of course, but it is a fairy-tale that even well-educated, highly intelligent people are willing to believe.

In this paper we wish to draw attention to an aspect of this plan which ought to shake the complacency of all who cherish the natural order that our wonderful Creator has established. We are speaking of the use of high frequency electromagnetic radiation in densely populated areas to connect online digital devices into a single integrated network. This will encompass cell phone technology, high-volume data transmission for both home and business use, and the broad array of domestic appliances that will comprise what is sometimes called 'the Internet of Things' (IoT).

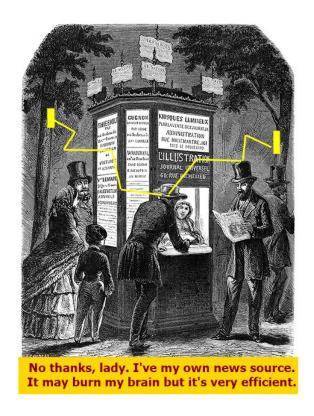
"In today's world, everyone is exposed to two types of EMFs: (1) extremely low frequency electromagnetic fields (ELF) from electrical and electronic appliances and power lines and (2) radiofrequency radiation (RF) from wireless devices such as cell phones and cordless phones, cellular antennas and towers, and broadcast transmission towers... Not everything is known yet about this subject; but what is clear is that the existing public safety standards limiting these radiation levels in nearly every country of the world look to be thousands of times too lenient." - BioInitiative Report 2012

We will not be discussing the social implications of such a network or the many ways it can be used for mass surveillance, propaganda and behavior modification. As a tool of social control, it will offer a totalitarian state unlimited access to the private lives of its citizens, to the point where 'privacy' as we once understood the term will be largely meaningless.

We will be discussing rather the adverse health implications of this planned network, which many genuinely scientific studies reveal will be both serious and permanent. For those who still believe in the fairy-tale, this is the part where Hansel and Gretel – not the witch – finish up in the boiling cauldron.

## The Background

As most people are probably aware, cell-phone communication uses a series of transmission nodes mounted on towers to convey a signal between two geographical locations. The network keeps track of every user by sending a signal – every minute or so – to their respective cell phones and 'asking' for its current location. This information enables the network to connect users who may be a thousand miles apart by sending packets of voice data to their nearest cell towers. This is then conveyed 'by air' – using a radio frequency in the electromagnetic spectrum – from the cell tower to the user's phone. So, even when noone is talking to anyone else, every cell phone is still actively connected to the network.



The first generation (1G) of cell phone technology, which was introduced in the US in the 1983, used an analog signal. The second generation (2G), which came along in 1991, replaced this with a digital signalling protocol which was much more efficient (since it enabled the encryption of content) and easier to enhance (since it could take advantage of general advances in electronic technology, such as miniaturization). Since it converted all input into digital form, 2G also enabled text messages and images to be transmitted over the network, which was something the 1G analog system couldn't do.

2G used a set of standards known as GSM. A more sophisticated set of standards – IMT-2000 – was introduced commercially with the arrival of 3G in 2002. This allowed cell phones to transmit video data and communicate across the Internet. The radio frequency bands in which the technology operated were also increased with 3G, allowing for significantly higher rates of data transmission. This made it possible for users to browse the Internet from specially enhanced cell phones (the so-called 'smart' phones).

Some readers may remember the consternation in many countries as governments auctioned off the newly licensed radio frequencies to the highest bidders. In order to implement **3**G the telecommunication companies needed official approval to use the higher frequencies and were expected to pay for the privilege. This facilitated the orderly exploitation of a resource which – for good reason – had never previously been used (outside the military).

The current generation, 4G, which was first implemented in Sweden in 2009, was designed to enable video-conferencing, high-definition television, and gaming services, among others. It is up to 20 times faster than 3G.

The industry standard for the next or fifth generation, 5G, is currently being developed and is expected to be finalised by 2020. The new standard and the technology that underpins it will enable massive device connectivity and significantly higher data transfer rates, as well as cost and energy savings. If 5G goes ahead, transmission speeds of up to 2.5 gigabytes of data per second will be commonplace.



#### **Industrial Muscle**

The industry is doing all it can to convince the public that these innovations are without harmful side-effects, that the huge improvements in connectivity and data transfer will add greatly to our quality of life, and that no modern economy can remain competitive if it fails to avail of this technology. In a sense they are pushing an open door since the public, especially the younger generation, are keen to acquire the vast range of entertainment services that 4G and 5G can provide. Also, business managers are more concerned with keeping up with technological developments than with peripheral issues, such as possible adverse health effects of EMR in the longer term, particularly when the industry and government regulators continue to claim that there are none.

If it were not for a few lone voices in the scientific world, the industry could continue to steamroll ahead. To date it has met with little serious opposition. Whenever anyone claims that prolonged exposure to electromagnetic radiation might have harmful health effects, the industry can swiftly flood the media with strongly worded counter-claims. Its detractors are accused of fear-mongering, of conducting poor quality research, and of having a deficient understanding of the technology. The industry also funds scientific studies of its own which supposedly refute what it regards as contrarian and eccentric allegations.

"Very low-level ELF and RF exposures can cause cells to produce stress proteins, meaning that the cell recognizes ELF and RF exposures as harmful. This is another important way in which scientists have documented that ELF and RF exposures can be harmful, and it happens at levels far below the existing public safety standards." - BioInitiative Report 2012

The industry also uses disinformation to confuse the public, often misrepresenting the arguments made by its critics. One of its most successful to date is its claim that adverse health effects can arise only from the thermal or heating properties of electromagnetic radiation (EMR). Since studies show that the thermal effect of the EMR produced by a cell phone is far too low to affect human tissue, they should be quite safe. This would probably be true if the only effects were thermal, but they are not.

We will now examine evidence to show that the industry is lying, that it is fully aware of the adverse health implications of long-term cell phone usage, and that it has known of these for several decades. Just like the tobacco industry in the 1950s and 1960s, or the pharmaceutical industry over the past 70 years, the cell phone industry is owned and controlled by a consortium whose only immediate goal is profit-maximization. And the profits are immense. These corporate giants will use every trick in the book, including obfuscation, suppression of evidence and outright lies, to maintain market share and conceal the harm caused by their products.

## **Industry Safety Standards**

Safety standards in the cell-phone industry are set by national regulatory bodies, usually by reference to recommendations made by international organizations like the International Commission on Non-Ionising Radiation Protection (ICNIRP) and the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR). Within member states of the European Union, the industry is compliant with health regulations if electromagnetic fields do not exceed the limits set out in Council Recommendation 1999/519/EC1.

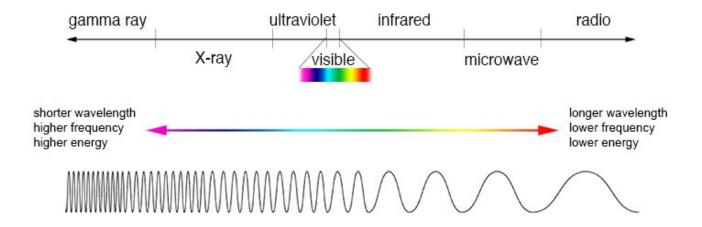
"What is remarkable about studies on DNA, genes and proteins and EMFs is that there should be no effect at all if it were true that EMFs are too weak to cause damage. Scientists who believe that the energy of EMFs is insignificant and unlikely to cause harm have a hard time explaining these changes, so are inclined to just ignore them. The trouble with this view is that the effects **are** occurring. Not being able to explain these effects is not a good reason to consider them imaginary or unimportant." - BioInitiative Report 2012

As with the pharmaceutical industry, the cell phone industry makes its own rules. Its own scientists, or scientists with close ties to the industry, decide what is safe and what is not. It is virtually impossible for an independent agency to raise well-founded scientific concerns at a public forum regarding the adequacy or reliability of industrial standards. Peer-reviewed research papers prepared by well-respected scientists may enter the public domain, but there is no guarantee that they will be taken seriously, or even considered, either by governments or by key players in the industry. On top of all this, the cell phone industry, like the vaccine industry, has an uncanny ability to conduct or sponsor studies and trials which always seem to give them the answers they want.

The stark reality is that current safety guidelines are based on thermal effects **only**. They completely ignore the non-thermal (heating) effects of EMR, even though the latter are millions of times greater (as we shall see).

# The Electromagnetic Spectrum

Before we examine the non-thermal effects of EMR, it will help if we review the structure of the electromagnetic spectrum and the reasons why certain kinds of radiation are known to be harmful.



#### The Electromagnetic Spectrum

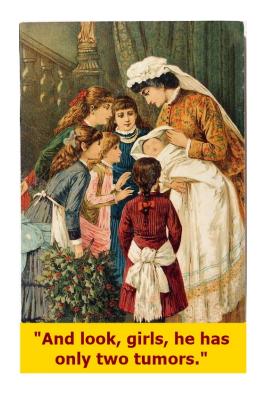
The electromagnetic spectrum is among the wonders of God's creation, though it is seldom mentioned in that context. Its properties are astonishing. The portion we are most familiar with is the narrow segment in the middle of the above chart. We perceive radiation in this part of the spectrum as visible light.

The part of the spectrum to the left of visible light – ultraviolet radiation, x-rays, and gamma rays – are all of a higher frequency than light and so they carry far more energy. We can tolerate low levels of exposure to ultraviolet light but prolonged exposure will cause sunburn which, if left untreated, can be fatal. The amount of x-ray and gamma ray exposure that we can safely absorb is extremely low due to the intensity of the energy in these wavebands. (Gamma rays and x-rays are sometimes caused ionising radiation since they carry enough energy to knock electrons out of their atoms, thereby 'ionising' the atom.)

Visible light is perfectly suited to our physiology and can be absorbed in almost infinite amounts. However, this does not hold for wavelengths to the right of visible light, even though they are longer and carry less energy. We need heat or warmth for good health, but too much can kill us. The feeling of warmth is our physiological response to infrared radiation. It is an important 'sense' (like touch, taste, etc) since, without our ability to perceive and regulate the amount of infrared radiation entering our bodies, we would either freeze to death or die of heatstroke.

#### Microwave Radiation and Radio Waves

This brings us to the two longer wavebands, microwave radiation and radio waves. We have no ability to perceive either of these through our senses. We can only detect their presence when their energy levels are too great and causing harm to our bodies. The EMR from cell-phones, even in the 5G bracket, will not normally generate thermal effects of this kind.



A microwave oven works as a heating device, not because microwaves per se are heat generators, but because the power setting on a microwave oven can be as high as 800 watts. It is this high concentration of electrical energy, even when distributed via the longer wavelengths in the microwave band, that produces the thermal effect.

The advantage with both microwaves and radio waves is that they are highly penetrative. Visible light can be completely blocked by a thin layer of atoms (or a cell membrane), but microwaves and radio waves can travel far below the surface of an object. It is this penetrative property which makes them so useful for telecommunications.

The cell-phone industry has long argued that, since microwaves generated at very low energy levels have no thermal effect, they can be safely absorbed. Even after many years of exposure no discernible health condition should emerge. The average cell phone transmits at a very low power level, about 1-2 watts, which is far below the level needed to produce a thermal effect. (A cell tower, of course, is much more powerful since it must cover a very wide area. At a thousand watts or more, it could cause real harm, but only if one is 'relatively' close to it.)

# Even weak EMR has a biological effect

So, what could possibly cause adverse health effects at these energy levels? The answer, which has been known for over 60 years, is that even **weak** magnetic fields can interfere with the biochemical behavior of living cells, whether human, animal or plant, and that this interference, if allowed to persist over a period of several years, will adversely affect the health of the organism. Furthermore, since the effect is cumulative, the damage caused by continued exposure for more than five years will generally be irreversible.

We will now look at the evidence for this and show why proliferating cell-phone usage, especially in the 4G and 5G brackets, will have **serious** health implications for the general population of all industrialised countries in the years ahead.

This health factor has been known for decades. The following quotation comes from a paper titled, *Health Implications of Long-term Exposure to Electrosmog* by Dr Karl Hecht, which was published in 2012. Dr Hecht was commissioned by a German regulatory body to review the large number of longitudinal studies that had been conducted in the Soviet Union and East Germany into the health effects of prolonged exposure to low level radiation in the workplace. These research studies, which were carried out between 1960 and 1990, were conducted by scientists whose qualifications and expertise were on a par with western standards:

"Furthermore, these findings on long-term effects of electromagnetic fields have been obtained from a broad range of research. Out of more than 1500 Russian scientific papers, the authors selected 878 for the government-commissioned review. The selected papers were based on annual occupational health and industrial hygiene assessments legally required for those occupationally exposed to electromagnetic fields and most of these assessments had been carried out on thousands of workers over long periods. It was of particular interest to see that cases of illness clearly increased even though the Russian exposure limits of electromagnetic fields are three orders of magnitude lower than in Western Europe."

Having closely examined over 870 studies which covered over 3500 individuals, Dr Hecht discovered that the Russians were already fully aware of the adverse health implications of prolonged exposure in the workplace to low levels of EMR. But how low was "low"? Incredibly, the level of exposure in these studies was more than 1000 times LESS than the permitted level in the West today.

Dr Martin Pall, Professor Emeritus of Biochemistry and Basic Medical Sciences at Washington State University, has repeatedly drawn attention to the studies discussed by Hecht. In his paper, 5G: Great Risk for E.U., U.S. and International Health! Compelling Evidence for Eight Distinct Types of Great Harm Caused by Electromagnetic Field (EMF) Exposures and the Mechanism that Causes Them (2018), he issues a clarion call to fellow scientists and other influential parties to wake up to the dangers posed by this technology. He is especially alarmed by the planned introduction of 5G which, he says, will put "all of the advanced technology societies on earth... at great risk"

"Human beings are bioelectrical systems. Our hearts and brains are regulated by internal bioelectrical signals. Environmental exposures to artificial EMFs can interact with fundamental biological processes in the human body. In some cases, this may cause discomfort, or sleep disruption, or loss of well-being (impaired mental functioning and impaired metabolism) or sometimes, maybe it is a dread disease like cancer or Alzheimer's disease. It may be interfering with one's ability to become pregnant, or to carry a child to full term, or result in brain development changes that are bad for the child. It may be [that] these exposures play a role in causing long-term impairments to normal growth and development of children, tipping the scales away from becoming productive adults." - BioInitiative Report 2012

If 5G goes ahead, he warns, the harmful health implications of EMR will be plain for all to see in about ten years time. Cancer rates of every kind will increase dramatically, along with a host of other health conditions.

The eight distinct types of harm, to which he alludes in the title of his paper, are as follows. All are extremely well documented and supported by multiple studies (See **Appendix A**):

#### 1. EMR breaks DNA strands

EMR strikes and breaks strands of DNA. This can be readily observed under laboratory conditions. While the body's defense mechanisms can carry out a certain level of repair, continual strand breakages over time will result in mutational changes and cause cancer. (The intensity and duration of EMR exposure needed to do this are considerably less than the rates that will be commonplace under 5G.)

## **2.** EMR reduces fertility

Ongoing exposure to EMR results in reduced fertility in both males and females, as well as an increased rate of spontaneous abortion, lowered levels of estrogen, progesterone and testosterone, and lowered libido. The birth rate in western countries will fall dramatically if 5G is introduced. The sperm count in industrialised countries is already half of what it should be, while sperm motility (a measure of quality) is also decreasing. A study of mouse reproduction showed that radio-wave/microwave EMR exposure at dosage levels well within the 'safe' limits for humans resulted in a sharp decline in fertility and eventually caused sterility.



## 3. EMR causes neurological effects

Even at levels of EMR that are well within the existing safety guidelines, prolonged exposure causes a wide range of neurological effects. These include sleep disturbance and insomnia, fatigue, headaches, depression, poor concentration and attention deficits, memory lapses, dizziness and vertigo, agitation, anxiety, and irritability. While troubling in their own right, these symptoms produce levels of stress which weaken the immune system and make the individual more susceptible to other forms of disease.

## 4. EMR increases programmed cell death

Prolonged exposure to EMR can greatly increase the rate of programmed cell death (known as apoptosis). This is a mechanism the body uses to remove a cell which is too stressed to function properly. This may be a factor in the dramatic increase in recent decades in neurodegenerative disorders such as Alzheimer's and MS. At least five studies of young rats demonstrate an EMR role in producing Alzheimer-like effects.

#### 5. EMR increases oxidative stress

Oxidative stress, which has a role in almost all chronic diseases, has been shown to increase significantly under EMR exposure. It arises when the number free radicals in the body is greater than the body's ability to neutralise them with antioxidants. A free radical is an oxygen-bearing molecule with an uneven number of electrons. The uneven number allows it to react more easily with other molecules and cause long-chain chemical reactions which are not always beneficial to one's health. Nutritionists recommend a diet high in antioxidants to help counter this effect.

#### **6.** EMR affects hormone secretion

Studies have shown that prolonged EMR exposure affects the rate of hormone secretion into the bloodstream, raising the levels of some hormones and lowering others. Since hormones have a major impact on many vital bodily functions, anything that affects their rate of secretion will affect the body as a whole.



#### 7. EMR fundamentally affects individual cells

EMR exposure affects the amount of calcium in our cells, causing it to increase unnecessarily. Each cell has a mechanism known as a voltage-gated calcium channel which regulates the amount of calcium entering the cell. The channel is extremely sensitive to voltage changes, including those caused by exposure to EMR. Since these effects can be observed and measured in a laboratory, they offer conclusive proof that non-ionising, non-thermal EMR has a fundamental effect on human biology, even at exposure and duration rates well below existing safety guidelines.

Some scientists believe most of the harm caused by EMR exposure can be traced to the way it interferes with the voltage-gated calcium channel in each cell of our body. Since many plants have similar calcium channels to those found in humans and animals, prolonged exposure to EMR will also cause damage to trees and other forms of vegetation.

## 8. EMR greatly increases the risk of cancer

Numerous studies show a direct connection between prolonged exposure to EMR and the increase in certain types of cancer, such as acoustic neuromas and cancer of the brain and salivary glands. There is a strong correlation between the side of the head affected and the side to which a cell phone is normally held. Rates of cancer are also significantly higher among people living near cell phone towers and those who operate short-wave radios or radar systems. (A radar system is a microwave transmitter and receiver. The microwave oven in most homes is based on the <u>same</u> technology.)

Before the advent of cell phone technology, melanomas (cancers of the skin) were generally found only on those parts of the body that had been exposed to the sun. Increasingly such cancers are now being found all over the body, as would be expected if they were caused by high exposure to EMR.

These are not the only health effects. There are many more, such as the debilitating effect that EMR has on the blood-brain barrier, its impact on melatonin levels (which influence our sleep patterns), and the increased incidence of cataracts among users exposed long-term to EMR. EMR has also been shown to cause a near instantaneous increase in what are known as 'heat shock' proteins. This mechanism is part of the body's normal defense response to certain kinds of stress. The fact that it can trigger this response is proof that EMR is raising the level of stress in our body, even though we may not notice it.

## The cell phone industry is lying

Scientists like Dr Pall are greatly concerned by the attitude that the cell-phone industry to taking to the issue of safety. In his excellent paper, which we highly recommend, he goes to great lengths to summarize the relevant scientific literature and show how extensive and compelling it actually is. In doing so he shows how it flatly contradicts everything that the industry has been telling us. If that is the case, then how has the industry reacted to these studies? Here is Dr Pall's response:

"There are 77 different reviews [in my paper], each documenting the existence of one or more of these non-thermal EMF effects. What, then, do the two organization reports that the EU authorities and the US authorities reply upon [ICNIRP and SCENIHR] have to say about these independent reviews? The answer is absolutely nothing! Neither one of them uses any of these independent reviews to assess EMF effects." [emphasis added]

He concludes that the safety guidelines approved by the EU Commission and the FCC (Federal Communications Commission) in the US "are **completely unscientific** and cannot be relied upon to protect our safety." [emphasis added]

Is he right? The independent studies which he cites show beyond doubt that he is. So too do the studies conducted in the Soviet Union in the period 1960-1990. So too do several other studies which he does not cite. So too does a major \$25 million study conducted by the National Toxicology Program (NTP) in the US in 2016, which found that prolonged exposure to EMR greatly increases the risk of brain cancer. This study is particularly important because it showed that the EMR damage that it identified could not be attributed to heating effects on tissue but was due entirely to non-thermal factors. Since the EU and FCC safety guidelines relate only to the thermal effect of EMR, they are seriously defective and should be changed as a matter of urgency.

"Effects occur at non-thermal or low-intensity exposure levels thousands of times below the levels that federal agencies say should keep the public safe. For many new devices operating with wireless technologies, the devices are exempt from any regulatory standards. The existing standards have been proven to be inadequate to control against harm from low-intensity, chronic exposures, based on any reasonable, independent assessment of the scientific literature."

- BioInitiative Report 2012

Commenting on the NTP study, O W Brawley MD, the chief medical officer of the American Cancer Society stated: "For years, the understanding of the potential risk of radiation from cell phones has been hampered by a lack of good science. This report [by the NTP] is good science...[it] marks a paradigm shift in our understanding of radiation and cancer risk. The findings are unexpected; we wouldn't reasonably expect non-ionizing radiation to cause these tumors."



Despite what Dr Brawley says, the findings should <u>not</u> have been unexpected! Anyone who had followed the work in this field would have known that "good science" had already proven beyond all doubt that prolonged exposure to EMR will greatly increase the risk of cancer. Dr Brawley and others like him were greatly misled by the cell phone industry and its bogus assurances.

EMR appears to work on the human body by conveying to our cells <u>information</u> that they do not need, which they cannot effectively ignore, and which hampers their normal operation. If we think of EMR as information rather than energy it may be easier to understand why and how it affects us, why it can do so at extremely low frequencies and energy levels, and why its impact can vary so much from person to person.

## Assessing EMR levels in your home

It is not necessary to purchase an expensive EMR device to assess the amount of EMR in your home. Just get an old handheld AM radio, tune it to either end of the dial (which has no radio station reception), and turn up the volume. Now walk around your home and check for EMR. The louder and more intense the audio static the more EMR it is detecting. This will help you identify the 'hot spots' in your home and the best places for rest.

#### Pulsed or modulated EMR

Dr Pall also speaks of the need to conduct all studies into EMF effects using pulsed EMF sources, similar to those used by the cell phone industry. Pulsed EMFs are, generally speaking, more biologically active than non-pulsed EMFs. Many studies have been conducted which their authors claimed were based on wi-fi, cell phone or cordless phone communication, but since they did not use pulsed EMFs, their findings were largely irrelevant. The pulsations to which he refers are due to the adoption of digital signalling with 2G. This enabled the information to be encoded in a very compact way within the electromagnetic wave, thereby changing its 'shape'. This rapid change in the shape of the wave greatly increases its biological effect. Since 5G will carry far more data, all in digital form, the number of EMR pulsations striking the human body per unit time will also increase. This effect, in turn, will be compounded by the higher frequencies that 5G will use and the exponential increase in the number EMR cell-towers and local transmitters in the network.

## Longitudinal studies in the former Soviet Union

Since few studies in the West have been conducted over a long period of time, where subjects have been monitored for ten years or more, the full health implications of long-term exposure to EMRs are not fully understood. This is why the studies cited by Hecht are so valuable. The Russians conducted numerous longitudinal studies which revealed that adverse health effects which accrue over a 3 year period can be reversed if the individual is removed from an EMR-rich environment and reassigned for 2 years to a job which has no EMR exposure of any kind. Workers who were exposed to EMR for 5 years suffered adverse health effects which could not be fully reversed, while workers who spent 10 or more years in an environment where they were exposed to EMR on an ongoing basis were found to exhibit a significant increase in serious illness, including cancer.

If you have followed the story so far, you will see that 5G, if implemented, is likely to be a public health disaster. However, its true impact will not become apparent for about ten years or so. Not only will it lead to a marked escalation in the incidence of many forms of serious illness, but it will also cause a sudden fall in fertility. Fewer children will be born and those who are born will be much more prone to illness, have less vitality, and suffer from a range of neurological problems such as poor attention, weak memory, and slow learning. The parents of these children, along with the wider community, will also endure chronic debilitation from their uninterrupted exposure to biologically-active EMR, day after day, week after week, and year after year.

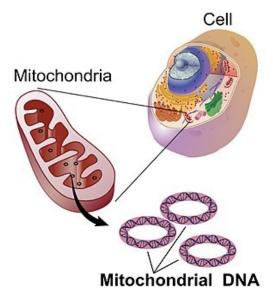
By any objective measure, 5G has the potential to severely damage the fabric of our society.



The natural resonance of the earth, known as the Schumann Resonance, is around 8 Hz (i.e. 8 cycles per second). The natural resonance of our brain is in the range of 10-30 Hz. On the other hand, a 5G waveband could operate at 28 GHz, or 28,000,000,000 cycles per second. It is irrational to believe that we can live in the midst of this and not feel the effects. And it is foolish to imagine that these effects will be either neutral or beneficial. So what does that leave?

## Children are especially vulnerable to **5**G

These observations take no account of the implications for the human genome of prolonged exposure to EMR in a 5G environment. Cancer results from damage to our DNA. Much of this mutational damage can be corrected across generations, where healthy genes from at least one parent is passed on to the child. This is not the case, however, with the DNA in our mitochondria. Since this is transmitted only through the female line in each generation, it continues to accumulate mutations. (The mitochondria in our cells are the 'power generators', converting glucose into energy. They are already present in the ovum at the time of conception, so the father's DNA does not affect them.) The human genome is such an astounding creation that it can function normally even when burdened by a great many mutations. But it has limits. Our mitochondrial cells will malfunction or shut down if too many mutations accumulate. Since they are already far from perfect, some scientists believe they could be especially vulnerable in a 5G environment. We are likely to see a great increase in the number of spontaneous abortions as a result.



The cell phone industry is completely indifferent to the health implications of its products, even where children are concerned. Take, for example, the standard that it uses to measure safe exposure limits. These are set by reference to an adult male with a height of 6'2" weighing 220 lbs! So, even if the 'limit' is scientifically valid (which it isn't) it cannot possibly safeguard a child.

The 'science' employed by the industry is cynical in the extreme. Consider, for example, the phenomenon of EMR penetration. Electromagnetic radiation has greater health effects the further it travels into one's body. The exposure level that would penetrate about an inch or two into the head of an adult male would pass through the head of a child. He or she would be receiving a dose of radiation which, in practical terms, was 5-10 times greater than that of an adult male.

The Soviet studies of occupational exposure to EMR also revealed that younger persons were more sensitive than adults to EMR. It is inconceivable that the cell phone industry was not aware of this.

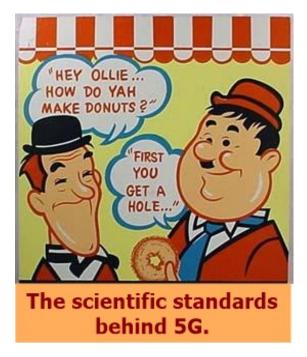


## Developing brains are more sensitive to EMR

Another critical difference between an adult and a child is their respective rates of development. A damaged cell in the brain of an adult may simply shut down and leave its sisters cells to carry out its function. In the brain of a child, however, where a number of cells must co-operate to create a new or enhanced function, the absence of a damaged cell can have wider repercussions. A developing brain is much more sensitive to biological shock than one which is already fully developed.

The potential for harm to a child in the womb is even greater. Most mothers today are working outside the home, either full-time or part-time, often in environments where they are constantly exposed to EMR. Many use cell phones and smart phones, laptops, tablets and workstations. Each of these mothers is unique. The tiny baby inside her is being exposed to levels of radiation which are thousands of times greater than that of any other unborn child in history. Under 5G the levels of exposure will increase dramatically. If we were to think of universal cell phone usage as a massive social experiment, then this aspect of the experiment must surely qualify as its most unscrupulous and grotesque.

We need to bear in mind that brain waves are themselves a form of EMR. They do not utilise an energy spectrum that is unique to humans, but operate in accordance with the same electromagnetic principles that are found everywhere in nature. If the earth's magnetic field, weak though it is, can move the needle of a compass, then why do some scientists – with ties to the industry – continue to argue that cell phone EMR cannot affect the brain? The brain of a child, since it is still developing, is even more sensitive to these effects, very possibly to a far greater extent than 'good' science has yet been able to establish. 5G would constitute an alarming violation of the rights of our children. The industry would be guilty of implementing a monstrously ill-conceived method of generating huge profits and, in the process, destroying society.



## What is different about 5G?

The next generation of cell phone technology will vastly increase the speed and capacity of national and international networks, where users can 'enjoy' always-on, livestreaming virtual reality gaming (if they want to), connect all of their home appliances to an 'intelligent' central organizer (if they want to), and watch an endless number of high-resolution cat videos on YouTube (if they want to). All of these utterly superfluous 'services' will be enabled by a great expansion in the spectrum of EMR that will now be utilised by the industry. Governments will even license the millimeter wave spectrum which uses extremely high frequencies of 24GHz and above. In all around 11 GHz of new frequencies will be added to the extensive range of EMR wavelengths already available.

# 5G will involve an exponential increase in cell towers and transmitters

The new system will involve an exponential increase in cell towers and transmitters. This is an aspect of 5G which many scientists say is truly alarming. Since the higher frequencies have significantly smaller wavelengths, they will cover a much smaller geographical area. The existing cell tower networks in cities across America will have to be extensively upgraded to ensure that no cell phone user will be more than a few hundred feet from a transmitter. If will therefore be impossible to go anywhere in a large city without being bathed continuously in high-frequency microwave radiation. This will affect everybody, regardless of whether or not they are using a cell phone. Even children in their mother's womb will be subjected to this, right from the moment of conception.

If 5G sounds like something Satan has planned for mankind, you are right on track.

This is such an outrageous violation of our civil liberties that it is hard to understand how anything of the kind could be deemed acceptable. Who approved this? Why was the public never consulted at any stage? Why is good science being utterly ignored? And why is the entire nation being subjected to a monstrous social experiment that will almost certainly have dire, irreversible consequences?



To answer these questions we need to look at the bigger picture, to recognize that the New World Order will take root only when the existing one is undermined and destroyed. Before it can be overthrown militarily, the U.S. must first be weakened on a number of levels – spiritual, moral, economic, and educational, as well as, most importantly, in its capacity to maintain a vigorous industrial base and a vibrant, productive workforce. Almost half of America's industrial base has already been 'off-shored' to Asia, notably China, a thinly-disguised Marxist enemy. And the stealth evisceration of the workforce is well under way, with GMOs, vaccines, chemtrails, glyphosate, and many other environmental pollutants. 5G could prove to be more destructive than any of them.

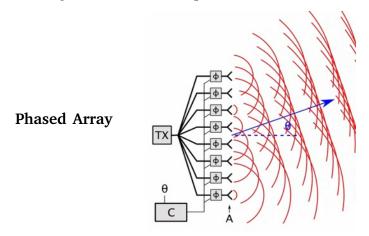
Ask yourself, What percentage of American children born in 2030 will be physically and neurologically healthy? How many will reach age 10 without being hampered by chronic asthma, speech difficulties, poor concentration, learning delays, poor reasoning skills, behavioral problems, severe allergies, digestive disorders, low energy levels, or recurring bouts of ill-health, not to mention some form of autism or physical impairment? Any child bombarded with 5G radiation from the hour he or she is conceived will be very fortunate indeed to avoid this minefield.

And remember, we are only talking about the children who are born, not the unfortunate ones who will miscarry during pregnancy due to radiation effects. Even the rate of pregnancy itself will fall as 5G exacts a heavy toll on fertility. As a tool of stealth eugenics, this wretched technology is hard to beat.

Referring to the FCC and its approval of 5G antennas, Dr Pall said: "In a world where shocking behavior has become less and less shocking, I consider their views to be genuinely shocking. The U.S. situation is mass insanity."

## **Phased Arrays**

There is yet another feature of 5G which is deeply troubling. This is its use of high frequency antennas and cell towers to create what are known as phased arrays. It would appear that few scientists, even those who are genuinely concerned about the health implications of EMR and 5G, have given thought to this sinister phenomenon.



To understand how it works, we need to examine the specific pathway that an EMR beam will take to your cell phone. The short wavelengths of 5G EMR, as we have already noted, cover only a small distance and, generally speaking, follow a narrow path. This means they are much more vulnerable to obstruction by everyday objects standing in their way. 5G will get around this problem (literally) by sending several beams to your cell phone from different directions at the same time, all carrying the same message. This greatly reinforces the EMR signal received by the cell phone and ensures high quality reception. As Wikipedia says: "In an array antenna, the radio frequency current from the transmitter is fed to the individual antennas with the correct phase relationship so that the radio waves from the separate antennas add together to increase the radiation in a desired direction" (Wikpedia)

The extensive array of transmitters on utility poles and lampposts in one's neighborhood or city block will allow these multiple beams to reach your cell phone, no matter where you are located. The co-ordination of EMR transmitters in this way is known as a phased array.

There will be many occasions during the day when an individual will happen to stand at the focal point of several 5G beams, in the office, the parking lot, the shopping mall, or wherever. He may not even be a cell phone user. On each occasion he or she will receive a burst of 5G EMR from a phased array which far exceeds the approved safety limits (which we have already shown are grossly inadequate). These moments of high intensity exposure will be capable of causing permanent, albeit localised, damage at a cellular level. If exactly the same part of our brain, say, receives multiple 'hits' over a period of several months, a tumor could form that would eventually kill us.

The antennas inside existing smart phones emit about 1-2 watts of EMR energy. However, 5G smart phones will have 16 or more tiny antennas in order to enable them to pick up the multi-directional beams. So, instead of absorbing 1-2 watts of EMR energy, the cell phone user could be absorbing 20 or more watts, much of which will penetrate the same side of his head. This is insane, but no-one in the industry or in government seems to care.

It is also known that when a pulse of high energy EMR enters the human body, it creates small electrical charges which are strong enough to act as tiny antennas that send the pulse even further into one's body. This will greatly increase the carcinogenic effect of 5G.



#### The Political Forces behind 5G

For an industry that is estimated to have a turnover of \$17 trillion, it is easy for it to buy top politicians and reputable experts. Experience has shown that a small but significant percentage of scientists are willing to conduct a 'legitimate' study – one which conforms with accepted scientific standards and protocols – but which is guaranteed to produce misleading or confusing results. This happens all the time. These peer-reviewed papers enable the big corporations to claim that purported health risks (from cell phones, vaccines, GMOs, or whatever) are exaggerated, that experimental results are inconclusive, that key questions have yet to be answered, and that more research is needed. In the meantime they can continue to ply their trade with the same venal contempt for public safety.

The organization that most Americans would expect to raise concerns about the health implications of EMR is the Environmental Protection Agency (EPA). However the cell phone industry successfully lobbied in the 1990s to limit the extent to which the EPA could investigate the non-thermal effects of EMR. Other relevant agencies have also kept silent. Neither the CDC nor the NIH (National Institutes of Health) have warned the public of the serious dangers posed by 5G.

The other key organization is the FCC (Federal Communications Commission). The previous head of the FCC was Thomas Wheeler (2014-2017), a former lobbyist for the cable and wireless industry and fund-raiser for Obama during his 2008 campaign. How was this man qualified to hold this position and use it to impose 5G on the American people? Shortly after he took office he issued a statement claiming that more than 10,000 studies over 40 years had shown no evidence linking cell phones and health hazards. It turned out that the studies in question referred mainly to microwave ovens!

While many experienced scientists are contacting senior politicians to warn of the dangers posed by 5G, including group letters to the EU Commission, the UN and the WHO, they are not receiving any meaningful feedback. All the indications are that both the US and the EU will press ahead with the implementation of 5G in 2019 and that the mainstream media will publish nothing whatever that might alert the public to the seriousness of what is happening.

## The Effect of EMR on Animals and Plants

Prolonged exposure to EMR is just as detrimental to animals and plants as it is to humans. Some studies suggest that it may be ever more damaging for certain species, such as bees, whose navigational ability is thoroughly confused by EMR, or insects whose delicate membranes or nervous systems could be damaged by EMR at certain frequencies. Even the pets in our home will be as vulnerable to 5G as we are. In addition to the increased risk of tumors, cataracts and other observable physical ailments, they may experience distress which their owners are unable to treat, or even recognize.

We would like to say a lot more about this subject but there is only so much we can cover in a paper like this. The implications are immense. For example, the collapse in the honeybee population will have appalling consequences for farming, food supply, and the survival of many varieties of trees and plants.

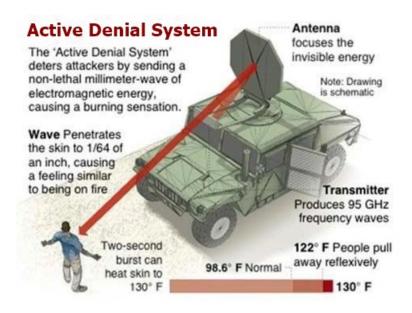


#### CONCLUSIONS

The masterminds behind the New World Order will not allow anything to stand in the way of their plans. They are ruthless in every sense of the word, but they are also extremely skillful at hiding their true intentions. They have known for over 60 years what 5G will do to mankind and have gone to great lengths to hide from the public any scientific information that might reveal what lies ahead. Perhaps the only effective warning to slip past their wall of silence was *The Zapping of America: Microwaves, Their Deadly Risk, and the Cover-up*, by Paul Brodeur, an investigative journalist, published in 1977.

The Department of Defense has worked closely with the electronics industry over the past several decades to develop a range of weapons based on EMR. It therefore has access to a wealth of data which it is not disclosing, data which shows comprehensively the range of effects that EMR of different frequencies and intensities can generate when directed at the human body. Top people in the US military already know that 5G will be harmful and that after 5-6 years its effects will be irreversible.

One of the best known EMR weapons developed by the US military is the Active Denial System. Here is how Wikipedia describes it: "The Active Denial System (ADS) is a non-lethal, directed-energy weapon developed by the U.S. military, designed for area denial, perimeter security and crowd control. Informally, the weapon is also called the heat ray since it works by heating the surface of targets, such as the skin of targeted human subjects...The ADS works by firing a high-powered beam of 95 GHz waves at a target, which corresponds to a wavelength of 3.2 mm." Note that Wikipedia neglects to mention that the "beam" is EMR. Note also that 5G operates in the same millimeter spectrum as the ADS.



The cover-up to which Paul Brodeur referred in 1977 has been under way for decades. Many scientists who have worked in this field, and understand the dangers, have long noted that official documentation and reports prepared by the military in various countries, especially members of NATO, never refer to the non-thermal effects of EMR.

The report prepared by Karl Hecht, to which we have already referred, was commissioned in 1996 by an official government body, the German Federal Agency of Telecommunications (now known as the Federal Network Agency). The agency wanted to know what the Soviet studies into long-term exposure to EMR had discovered. When Hecht submitted his report, with its alarming revelations, it was quietly consigned to its archives by the agency and never released to the public. Hecht was greatly taken aback by this attitude. Later, when he found that his contract did not preclude his own disclosure of the report, he made it available to fellow scientists.

It is also known that for many years that the Russian military beamed electromagnetic radiation into the American embassy in Moscow, seemingly to test its effect in a 'live' setting. Many embassy staff became ill and several died of cancer.

Military research into the uses of EMR show that certain frequencies elicit specific neurological effects. For example, EMR of a particular frequency can cause a person to hear voices by stimulating his auditory nerves – at a distance. If he does not know that an encoded EMR beam is being directed at him, the victim may think he is hallucinating or receiving messages from a supernatural source. Other frequencies cause the victim to experience extreme fear or intense irritability. Weapons based on these principles would be very effective on the battlefield. They could also be used in a civilian setting for crowd control or to incite an angry mob to behave in a particular way.

## The Word of God describes the wicked

The Enemy is exactly that – the **enemy!** He is also the Adversary and the great Deceiver. Those who serve and follow him are deeply imbued with the same destructive attributes. He is a Liar and a Murderer, and so too are his followers. We forget this at our peril.

The masterminds behind the New World Order are generational Luciferians. They despise Christianity and Judeo-Christian values. For them a "new" world order is one where the beliefs and values of ancient Babylon completely dominate and control all aspects of human activity. Since they place great stock in symbols and names, they will often mark their handiwork with something that proclaims their secret affiliation. We can see this in their 5G program, which obviously plays an important role in their plan to create a totalitarian system of control.

The antenna that will feature most prominently in the roll-out of 5G is one made by a company called Artemis:



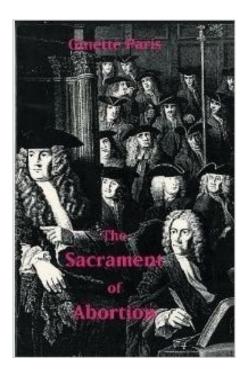








In Greek mythology, Artemis was a goddess and twin sister of Apollo. The Romans knew her as Diana the Huntress. We have already come across this figure in our paper on abortion and the goddess (#144).



A well-known feminist academic, professor Ginette Paris, published a book in 1992 – *The Sacrament of Abortion* – which told the world the true meaning of Artemis for those who are bringing in the New World Order. Her book was so controversial, so patently Luciferian, that it was later reissued under a new title, *The Psychology of Abortion*, in 2007. In her introduction she says: "Judeo-Christian values, which may have seemed necessary, perhaps even redemptive, some 2,000 years ago, now appear more and more irresponsible, and I will try to show how they are infinitely more cruel than abortion."

We can see here, not just a rejection of Biblical truth, but a portrayal of Christianity as something dangerous, a movement whose time has passed and whose continued existence will no longer be tolerated.

The following quotations from her book give a glimpse into the dark pagan mindset behind the New World Order. They also reveal its startling belief that the murder of children is somehow necessary for the health and well-being of the Cosmos:

"I have drawn inspiration throughout this book from a guiding image, the Artemis of Greek mythology (known to the Romans as Diana, the Huntress). She is an untamed Goddess..." (p.1)

..the ancient Goddess Artemis invites us to imagine a new allocation of life and death powers between men and women..." (p.26-27)

Artemis had a reputation for liking bloody sacrifices, including human ones, from the earliest recorded religious history of Greece, a practice that has given paganism such a bad name... abortion is a kind of sacrifice..." (p.34)

"She (Artemis) is a pagan Goddess, and yet she is the personification of absolute values, of purity at any price, a quality that leads inevitably to martyrdom." (p.43)

"Our culture needs new rituals as well as laws to restore to abortion its sacred dimension, which is both terrible and necessary." (p.92)

"Abortion as a sacrifice to Artemis. Abortion as a sacrament – for the gift of life to remain pure." (p.107)

It is unusual to find a collection of quotations by a single author which so perfectly express the depth of evil behind the New World Order, its psychopathic disregard for human life, or its wholesale commitment to Satan's plan for mankind.

Since Artemis is the goddess of human sacrifice, we can see why the Illuminati would want to associate her name with 5G.

The same company has also chosen the infamous yoni symbol as its logo. There is a dark irony in its choice of a fertility symbol for a technology that is secretly intended to reduce fertility.

It is just as the Word of God foretold:

"For among my people are found wicked men: they lay wait, as he that setteth snares; they set a trap, they catch men." (Jeremiah 5:26)

"Yea, they have chosen their own ways, and their soul delighteth in their abominations."
(Isaiah 66:3)

The Illuminati and their acolytes are very busy indeed, setting snares, lying in wait, trapping men, and delighting in their abominations. As the Bible says, they have chosen their own ways and rejected those of God.

The Bible also points to the existence of organized evil, of treachery hatched within a family or group of families (The word "houses" in Jeremiah 5:27 refers to family dynasties, not their habitations):

"As a cage is full of birds, so are their houses full of deceit: therefore they are become great, and waxen rich."

(Jeremiah 5:27)

"And death shall be chosen rather than life by all the residue of them that remain of this evil family..."

(Jeremiah 8:3)

The children of God should not fear the children of wickedness. For all their cleverness and their technology, for all their vast wealth, supposed knowledge and intellectual superiority, they are heading toward judgment and wholesale destruction:

"...they have none understanding: they are wise to do evil, but to do good they have no knowledge."

(Jeremiah 4:22)

They live by celebrating death and will reap to the full the dark harvest they have sown.

They are absolutely convinced that victory is within their grasp, but the LORD will send His Son at a time of His choosing. What a wonderful day that will be! Christ will utterly destroy this wicked cabal and the countless millions who have scorned the gospel message and chosen instead the path of Babylon.

We would note, in closing, that Isaiah referred to the work of destruction that Christ will accomplish. His choice of words is intriguing:

"And he will destroy in this mountain the face of the covering cast over all people, and the vail that is spread over all nations."

(Isaiah 25:7)

While this very likely relates to the all-embracing web of darkness and deceit that Satan has cast over the entire earth, it may also refer in a wider sense to the huge electronic array that the Enemy is building to control the minds of men.

Jeremy James
Ireland
December 14, 2018

## - SPECIAL REQUEST -

Regular readers are encouraged to download the papers on this website for safekeeping and future reference. They may not always be available. We are rapidly moving into an era where material of this kind may be obtained only via email. Readers who wish to be included on a future mailing list are welcome to contact me at <code>jeremypauljames@gmail.com</code>. A name is not required, just an email address.

For further information visit www.zephaniah.eu

**Copyright Jeremy James 2018** 

## Independent Scientific Studies which Show that Prolonged Exposure to Electromagnetic Radiation Can Cause Serious Health Effects

Note: The same paper may appear under more than one heading.

## **EMR breaks DNA strands**

- 1. Glaser ZR, PhD. 1971 Naval Medical Research Institute Research Report, June 1971. Bibliography of Reported Biological Phenomena ("Effects") and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation. Report No. 2 Revised
- 2. Goldsmith JR. 1997 Epidemiologic evidence relevant to radar (microwave) effects. Environ Health Perspect 105(Suppl 6):1579-1587.
- 3. Yakymenko I, Sidorik EP, Tsybulin AS. 1999 [Metabolic changes in cells under electromagnetic radiation of mobile communication systems]. Ukr Biokhim Zh (1999), 2011 Mar-Apr:20-28.
- 4. Aitken RJ, De Iuliis GN. 2007 Origins and consequences of DNA damage in male germ cells. Reprod Biomed Online 14:727-733.
- 5. Hardell, L., Sage, C. 2008. Biological effects from electromagnetic field exposure and public exposure standards. Biomed. Pharmacother. 62, 104-109.
- 6. Hazout A, Menezo Y, Madelenat P, Yazbeck C, Selva J, Cohen-Bacrie P. 2008 [Causes and clinical implications of sperm DNA damages]. Gynecol Obstet Fertil ;36:1109-1117.
- Phillips JL, Singh NP, Lai H. 2009 Electromagnetic fields and DNA damage. Pathophysiology 16:79-88
- 8. Ruediger HW. 2009 Genotoxic effects of radiofrequency electromagnetic fields. Pathophysiology. 16:89-102.
- 9. Makker K, Varghese A, Desai NR, Mouradi R, Agarwal A. 2009 Cell phones: modern man's nemesis? Reprod Biomed Online 18:148-157.
- 10. Yakymenko I, Sidorik E. 2010 Risks of carcinogenesis from electromagnetic radiation and mobile telephony devices. Exp Oncol 32:729-736.
- 11. Yakymenko I, Sidorik EP, Tsybulin AS. 2011 [Metabolic changes in cells under electromagnetic radiation of mobile communication systems]. Ukr Biokhim Zh (1999). 2011 Mar-Apr;83(2):20-28.
- 12. Gye MC, Park CJ. 2012 Effect of electromagnetic field exposure on the reproductive system. Clin Exp Reprod Med 39:1-9.
- 13. Pall, ML. 2013. Electromagnetic fields act via activation of voltage-gated calcium channels to produce beneficial or adverse effects. J Cell Mol Med 17:958-965. doi: 10.1111/jcmm.12088.
- 14. Pall, M. L. 2015 Scientific evidence contradicts findings and assumptions of Canadian Safety Panel 6: microwaves act through voltage-gated calcium channel activation to induce biological impacts at non-thermal levels, supporting a paradigm shift for microwave/lower frequency electromagnetic field action. Rev. Environ. Health 3, 99-116. doi: 10.1515/reveh-2015-0001.
- 15. Houston BJ, Nixon B, King BV, De Iuliis GN, Aitken RJ. 2016 The effects of radiofrequency electromagnetic radiation on sperm function. Reproduction 152:R263-R276.
- 16. Batista Napotnik T, Rebersek M, Vernier PT, Mali B, Miklavcic D. 2016 Effects of high voltage nanosecond electric pulses on eukaryotic cells (in vitro): A systematic review. Bioelectrochemistry. 2016 Aug;110:1-12. doi: 10.1016/j.bioelechem.2016.02.011.

- 17. Asghari A, Khaki AA, Rajabzadeh A, Khaki A. 2016 A review on Electromagnetic fields (EMFs) and the reproductive system. Electron Physician. 2016 Jul 25;8(7):2655-2662. doi: 10.19082/2655.
- 18. Pall ML. 2018 How cancer can be caused by microwave frequency electromagnetic field (EMF) exposures: EMF activation of voltage-gated calcium channels (VGCCs) can cause cancer including tumor promotion, tissue invasion and metastasis via 15 mechanisms. Chapter 7 in Mobile Communications and Public Health, Marko Markov, Ed., CRC press, pp 167-188.
- 19. Pall ML. 2018 Wi-Fi is an important threat to human health. Environ Res 164:404-416.

## EMR reduces fertility

- 20. Glaser ZR, PhD. 1971 Naval Medical Research Institute Research Report, June 1971. Bibliography of Reported Biological Phenomena ("Effects") and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation. Report No. 2 Revised
- 21. Tolgskaya MS, Gordon ZV. 1973. Pathological Effects of Radio Waves, Translated from Russian by B Haigh. Consultants Bureau, New York/London, 146 pages.
- 22. Goldsmith JR. 1997 Epidemiological evidence relevant to radar (microwave) effects. Environ Health Perspect 105(Suppl 6):1579-1587.
- 23. Aitken RJ, De Iuliis GN. 2007 Origins and consequences of DNA damage in male germ cells. Reprod Biomed Online 14:727-733.
- 24. Hazout A, Menezo Y, Madelenat P, Yazbeck C, Selva J, Cohen-Bacrie P. 2008 [Causes and clinical implications of sperm DNA damages]. Gynecol Obstet Fertil; 36:1109-1117.
- 25. Makker K, Varghese A, Desai NR, Mouradi R, Agarwal A. 2009 Cell phones: modern man's nemesis? Reprod Biomed Online 18:148-157.
- 26. Kang N, Shang XJ, Huang YF. 2010 [Impact of cell phone radiation on male reproduction]. Zhonghua Nan Ke Xue 16:1027-1030.
- 27. Gye MC, Park CJ. 2012 Effect of electromagnetic field exposure on the reproductive system. Clin Exp Reprod Med 39:1-9.
- 28. La Vignera S, Condorelli RA, Vicari E, D'Agata R, Calogero AE. 2012 Effects of the exposure to mobile phones on male reproduction: a review of the literature. J Androl 33:350-356.
- 29. Carpenter DO. 2013 Human disease resulting from exposure to electromagnetic fields. Rev Environ Health 2013;28:159-172.
- Nazlroglu M, Yuksel M, Kose SA, Ozkaya MO. 2013 Recent reports of Wi-Fi and mobile phoneinduced radiation on oxidative stress and reproductive signaling pathways in females and males. J Membr Biol 246:869-875.
- 31. Adams JA, Galloway TS, Mondal D, Esteves SC, Mathews F. 2014 Effect of mobile telephones on sperm quality: a systematic review and meta-analysis. Environ Int 70:106-112.
- 32. Liu K, Li Y, Zhang G, Liu J, Cao J, Ao L, Zhang S. 2014 Association between mobile phone use and semen quality: a systematic review and meta-analysis. Andrology 2:491-501.
- 33. K Sri N. 2015 Mobile phone radiation: physiological & pathophysiological considerations. Indian J Physiol Pharmacol 59:125-135.
- 34. Houston BJ, Nixon B, King BV, De Iuliis GN, Aitken RJ. 2016 The effects of radiofrequency electromagnetic radiation on sperm function. Reproduction 152:R263-R276.
- 35. Pall ML. 2018 Wi-Fi is an important threat to human health. Environ Res 164:404-416.

## EMR causes neurological effects

- 36. Marha K. 1966 Biological Effects of High-Frequency Electromagnetic Fields (Translation). ATD Report 66-92. July 13, 1966 (ATD Work Assignment No. 78, Task 11).
- 37. Glaser ZR, PhD. 1971 Naval Medical Research Institute Research Report, June 1971. Bibliography of Reported Biological Phenomena ("Effects") and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation. Report No. 2 Revised
- 38. Tolgskaya MS, Gordon ZV. 1973. Pathological Effects of Radio Waves, Translated from Russian by By Haigh. Consultants Bureau, New York/London, 146 pages.
- 39. Bise W. 1978 Low power radio-frequency and microwave effects on human electroencephalogram and behavior. Physiol Chem Phys 10:387-398.
- 40. Raines, J. K. 1981. Electromagnetic Field Interactions with the Human Body: Observed Effects and Theories. Greenbelt, Maryland: National Aeronautics and Space Administration 1981; 116 p.
- 41. Frey AH. 1993 Electromagnetic field interactions with biological systems. FASEB J 7:272-281.
- 42. Lai H. 1994 Neurological effects of radiofrequency electromagnetic radiation. In: Advances in Electromagnetic Fields in Living Systems, Vol. 1, J.C. Lin, Ed., Plenum Press, New York, pp. 2788.
- **43**. Grigoriev IuG. **1996** [Role of modulation in biological effects of electromagnetic radiation]. Radiats Biol Radioecol **36**:659-670.
- 44. Lai, H 1998 Neurological effects of radiofrequency electromagnetic radiation
- **45**. Aitken RJ, De Iuliis GN. **2007** Origins and consequences of DNA damage in male germ cells. Reprod Biomed Online **14**:727-733.
- **46.** Hardell, L., Sage, C. **2008.** Biological effects from electromagnetic field exposure and public exposure standards. Biomed. Pharmacother. **62**, **104-109**.
- 47. Makker K, Varghese A, Desai NR, Mouradi R, Agarwal A. 2009 Cell phones: modern man's nemesis? Reprod Biomed Online 18:148-157.
- 48. Khurana VG, Hardell L, Everaert J, Bortkiewicz A, Carlberg M, Ahonen M. 2010 Epidemiological evidence for a health risk from mobile phone base stations. Int J Occup Environ Health 16:263-267.
- 49. Levitt, B. B., Lai, H. 2010. Biological effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays. Environ. Rev. 18, 369-395
- 50. Carpenter DO. 2013 Human disease resulting from exposure to electromagnetic fields. Rev Environ Health 2013;28:159-172.
- 51. Politanski P, Bortkiewicz A, Zmyslony M. 2016 [Effects of radio- and microwaves emitted by wireless communication devices on the functions of the nervous system selected elements]. Med Pr 67:411-421.
- 52. Pall ML. 2016 Microwave frequency electromagnetic fields (EMFs) produce widespread neuropsychiatric effects including depression. J Chem Neuroanat 75(Pt B):43-51. doi: 10.1016/j.jchemneu.2015.08.001.
- 53. Hecht, Karl. 2016 Health Implications of Long-Term Exposures to Electrosmog. Brochure 6 of A Brochure Series of the Competence Initiative for the Protection of Humanity, the Environment and Democracy
- 54. Sangun O, Dundar B, Comlekci S, Buyukgebiz A. 2016 The Effects of Electromagnetic Field on the Endocrine System in Children and Adolescents. Pediatr Endocrinol Rev 13:531-545.
- 55. Belyaev I, Dean A, Eger H, Hubmann G, Jandrisovits R, Kern M, Kundi M, Moshammer H, Lercher P, Muller K, Oberfeld G, Ohnsorge P, Pelzmann P, Scheingraber C, Thill R. 2016 EUROPAEM EMF Guideline 2016 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses. Rev Environ Health DOI 10.1515/reveh-2016-0011.

- 56. Zhang J, Sumich A, Wang GY. 2017 Acute effects of radiofrequency electromagnetic field emitted by mobile phone on brain function. Bioelectromagnetics 38:329-338. doi: 10.1002/bem.22052.
- 57. Lai H. 2018. A Summary of Recent Literature (2007–2017) on Neurological Effects of Radio Frequency Radiation. Chapter 8 in Mobile Communications and Public Health, Marko Markov, Ed., CRC press, pp 189-224.
- 58. Pall ML. 2018 Wi-Fi is an important threat to human health. Environ Res 164:404-416.

## EMR increases programmed cell death

- 59. Glaser ZR, PhD. 1971 Naval Medical Research Institute Research Report, June 1971. Bibliography of Reported Biological Phenomena ("Effects") and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation. Report No. 2 Revised
- 60. Tolgskaya MS, Gordon ZV. 1973. Pathological Effects of Radio Waves, Translated from Russian by B Haigh. Consultants Bureau, New York/London, 146 pages.
- 61. Raines, J. K. 1981. Electromagnetic Field Interactions with the Human Body: Observed Effects and Theories. Greenbelt, Maryland: National Aeronautics and Space Administration 1981; 116 p.
- 62. Hardell L, Sage C. 2008. Biological effects from electromagnetic field exposure and public exposure standards. Biomed. Pharmacother. 62:104-109. doi: 10.1016/j.biopha.2007.12.004.
- 63. Makker K, Varghese A, Desai NR, Mouradi R, Agarwal A. 2009 Cell phones: modern man's nemesis? Reprod Biomed Online 18:148-157.
- 64. Levitt, B. B., Lai, H. 2010. Biological effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays. Environ. Rev. 18, 369-395
- 65. Yakymenko I, Sidorik E. 2010 Risks of carcinogenesis from electromagnetic radiation and mobile telephony devices. Exp Oncol 32:729-736.
- 66. Yakimenko IL, Sidorik EP, Tsybulin AS. 2011 [Metabolic changes in cells under electromagnetic radiation of mobile communication systems]. Ukr Biokhim Zh (1999). 2011 Mar-Apr;83(2):20-28.
- 67. Pall, ML. 2013. Electromagnetic fields act via activation of voltage-gated calcium channels to produce beneficial or adverse effects. J Cell Mol Med 17:958-965. doi: 10.1111/jcmm.12088.
- 68. Pall ML. 2016 Microwave frequency electromagnetic fields (EMFs) produce widespread neuropsychiatric effects including depression. J Chem Neuroanat 75(Pt B):43-51. doi: 10.1016/j.jchemneu.2015.08.001.
- 69. Batista Napotnik T, Rebersek M, Vernier PT, Mali B, Miklavcic D. 2016 Effects of high voltage nanosecond electric pulses on eukaryotic cells (in vitro): A systematic review. Bioelectrochemistry. 2016 Aug;110:1-12. doi: 10.1016/j.bioelechem.2016.02.011.
- 70. Asghari A, Khaki AA, Rajabzadeh A, Khaki A. 2016 A review on Electromagnetic fields (EMFs) and the reproductive system. Electron Physician. 2016 Jul 25;8(7):2655-2662. doi: 10.19082/2655.
- 71. Pall ML. 2018 Wi-Fi is an important threat to human health. Environ Res 164:404-416.

#### EMR increases oxidative stress

- 72. Raines, J. K. 1981. Electromagnetic Field Interactions with the Human Body: Observed Effects and Theories. Greenbelt, Maryland: National Aeronautics and Space Administration 1981; 116 p.
- 73. Hardell, L., Sage, C. 2008. Biological effects from electromagnetic field exposure and public exposure standards. Biomed. Pharmacother. 62, 104-109.
- 74. Hazout A, Menezo Y, Madelenat P, Yazbeck C, Selva J, Cohen-Bacrie P. 2008 [Causes and clinical implications of sperm DNA damages]. Gynecol Obstet Fertil; 36:1109-1117

- 75. Makker K, Varghese A, Desai NR, Mouradi R, Agarwal A. 2009 Cell phones: modern man's nemesis? Reprod Biomed Online 18:148-157.
- 76. Desai NR, Kesari KK, Agarwal A. 2009 Pathophysiology of cell phone radiation: oxidative stress and carcinogenesis with focus on the male reproductive system. Reproduct Biol Endocrinol 7:114.
- 77. Yakymenko I, Sidorik E. 2010 Risks of carcinogenesis from electromagnetic radiation and mobile telephony devices. Exp Oncol 32:729-736.
- 78. Yakimenko I, Sidorik EP, Tsybulin AS. 2011 [Metabolic changes in cells under electromagnetic radiation of mobile communication systems]. Ukr Biokhim Zh (1999). 2011 Mar-Apr;83(2):20-28.
- 79. Consales, C., Merla, C., Marino, C., et al. 2012. Electromagnetic fields, oxidative stress, and neurodegeneration. Int. J. Cell Biol. 2012: 683897.
- 80. LaVignera et al 2012 La Vignera S, Condorelli RA, Vicari E, D'Agata R, Calogero AE. 2012 Effects of the exposure to mobile phones on male reproduction: a review of the literature. J Androl 33:350-356.
- 81. Pall, ML. 2013. Electromagnetic fields act via activation of voltage-gated calcium channels to produce beneficial or adverse effects. J Cell Mol Med 17:958-965. doi: 10.1111/jcmm.12088.
- 82. Nazlroglu M, Yuksel M, Kose SA, Ozkaya MO. 2013 Recent reports of Wi-Fi and mobile phone-induced radiation on oxidative stress and reproductive signaling pathways in females and males. J Membr Biol 246:869-875.
- 83. Pall, M. L. 2015. Scientific evidence contradicts findings and assumptions of Canadian Safety Panel 6: microwaves act through voltage-gated calcium channel activation to induce biological impacts at non-thermal levels, supporting a paradigm shift for microwave/lower frequency electromagnetic field action. Rev. Environ. Health 3, 99-116.
- 84. Yakimenko I, Tsybulin O, Sidorik E, Henshel D, Kyrylenko O, Kysylenko S. 2015 Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation. Electromagnetic Biol Med: Early Online 1-16. ISSN: 1536-8378.
- 85. Houston BJ, Nixon B, King BV, De Iuliis GN, Aitken RJ. 2016 The effects of radiofrequency electromagnetic radiation on sperm function. Reproduction 152:R263-R276.
- 86. Dasdag S, Akdag MZ. 2016 The link between radiofrequencies emitted from wireless technologies and oxidative stress. J Chem Neuroanat 75(Pt B):85-93.
- 87. Wang H, Zhang X. 2017 Magnetic fields and reactive oxygen species. Int J Mol Sci. 2017 Oct 18;18(10). pii: E2175. doi: 10.3390/ijms18102175.
- 88. Pall ML. 2018 Wi-Fi is an important threat to human health. Environ Res 164:404-416.

## EMR affects hormone secretion

- 89. Glaser ZR, PhD. 1971 Naval Medical Research Institute Research Report, June 1971. Bibliography of Reported Biological Phenomena ("Effects") and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation. Report No. 2 Revised
- 90. Tolgskaya MS, Gordon ZV. 1973. Pathological Effects of Radio Waves, Translated from Russian by B Haigh. Consultants Bureau, New York/London, 146 pages.
- 91. Raines, J. K. 1981. Electromagnetic Field Interactions with the Human Body: Observed Effects and Theories. Greenbelt, Maryland: National Aeronautics and Space Administration 1981; 116 p.
- 92. Hardell, L., Sage, C. 2008. Biological effects from electromagnetic field exposure and public exposure standards. Biomed. Pharmacother. 62, 104-109.
- 93. Makker K, Varghese A, Desai NR, Mouradi R, Agarwal A. 2009 Cell phones: modern man's nemesis? Reprod Biomed Online 18:148-157.

- 94. Gye MC, Park CJ. 2012 Effect of electromagnetic field exposure on the reproductive system. Clin Exp Reprod Med 39:1-9.
- 95. Pall, M. L. 2015. Scientific evidence contradicts findings and assumptions of Canadian Safety Panel 6: microwaves act through voltage-gated calcium channel activation to induce biological impacts at non-thermal levels, supporting a paradigm shift for microwave/lower frequency electromagnetic field action. Rev. Environ. Health 3, 99-116.
- 96. Sangun O, Dundar B, Comlekci S, Buyukgebiz A. 2016 The Effects of Electromagnetic Field on the Endocrine System in Children and Adolescents. Pediatr Endocrinol Rev 13:531-545.
- 97. Hecht, Karl. 2016 Health Implications of Long-Term Exposures to Electrosmog. Brochure 6 of A Brochure Series of the Competence Initiative for the Protection of Humanity, the Environment and Democracy
- 98. Asghari A, Khaki AA, Rajabzadeh A, Khaki A. 2016 A review on Electromagnetic fields (EMFs) and the reproductive system. Electron Physician. 2016 Jul 25;8(7):2655-2662. doi: 10.19082/2655.
- 99. Pall ML. 2018 Wi-Fi is an important threat to human health. Environ Res 164:404-416.

## EMR fundamentally affects individual cells

- 100. Adey WR. 1988 Cell membranes: the electromagnetic environment and cancer promotion. Neurochem Res.13:671-677.
- 101. Walleczek, J. 1992. Electromagnetic field effects on cells of the immune system: the role of calcium signaling. FASEB J. 6, 3177-3185.
- 102. Adey, WR. 1993 Biological effects of electromagnetic fields. J Cell Biochem 51:410-416.
- 103. Frey AH. 1993 Electromagnetic field interactions with biological systems. FASEB J 7:272-281.
- 104. Yakimenko IL, Sidorik EP, Tsybulin AS. 1999 [Metabolic changes in cells under electromagnetic radiation of mobile communication systems]. Ukr Biokhim Zh (1999), 2011 Mar-Apr:20-28.
- 105. Gye MC, Park CJ. 2012 Effect of electromagnetic field exposure on the reproductive system. Clin Exp Reprod Med 39:1-9.
- 106. Pall, ML. 2013. Electromagnetic fields act via activation of voltage-gated calcium channels to produce beneficial or adverse effects. J Cell Mol Med 17:958-965. doi: 10.1111/jcmm.12088.
- 107. Pall ML. 2014 Electromagnetic field activation of voltage-gated calcium channels: role in therapeutic effects. Electromagn Biol Med. 2014 Apr 8 doi: 10.3109/15368378.2014.906447.
- 108. Pall ML. 2015a How to approach the challenge of minimizing non-thermal health effects of microwave radiation from electrical devices. International Journal of Innovative Research in Engineering & Management (IJIREM) ISSN: 2350-0557, Volume-2, Issue -5, September 2015; 71-76
- 109. Pall, M. L. 2015 Scientific evidence contradicts findings and assumptions of Canadian Safety Panel 6: microwaves act through voltage-gated calcium channel activation to induce biological impacts at non-thermal levels, supporting a paradigm shift for microwave/lower frequency electromagnetic field action. Rev. Environ. Health 3, 99-116. doi: 10.1515/reveh-2015-0001.
- 110. Pall ML. 2016 Electromagnetic fields act similarly in plants as in animals: Probable activation of calcium channels via their voltage sensor. Curr Chem Biol 10: 74-82.
- 111. Pall ML. 2016 Microwave frequency electromagnetic fields (EMFs) produce widespread neuropsychiatric effects including depression. J Chem Neuroanat 75(Pt B):43-51. doi: 10.1016/j.jchemneu.2015.08.001.
- 112. Batista Napotnik T, Rebersek M, Vernier PT, Mali B, Miklavcic D. 2016 Effects of high voltage nanosecond electric pulses on eukaryotic cells (in vitro): A systematic review. Bioelectrochemistry. 2016 Aug;110:1-12. doi: 10.1016/j.bioelechem.2016.02.011.

113. Asghari A, Khaki AA, Rajabzadeh A, Khaki A. 2016 A review on Electromagnetic fields (EMFs) and the reproductive system. Electron Physician. 2016 Jul 25;8(7):2655-2662. doi: 10.19082/2655.

## EMR greatly increases the risk of cancer

- 114. Dwyer, M. J., Leeper, D. B. 1978 A Current Literature Report on the Carcinogenic Properties of Ionizing and Nonionizing Radiation. DHEW Publication (NIOSH) 78-134, March 1978.
- 115. Marino AA, Morris DH. 1985 Chronic electromagnetic stressors in the environment. A risk factor in human cancer. J environ sci health C3:189-219.
- 116. Adey WR. 1988 Cell membranes: the electromagnetic environment and cancer promotion. Neurochem Res.13:671-677.
- 117. Adey WR. 1990 Joint actions of environmental nonionizing electromagnetic fields and chemical pollution in cancer promotion. Environ Health Perspect 86:297-305.
- 118. Frey AH. 1993 Electromagnetic field interactions with biological systems, FASEB J 7:272281.
- 119. Goldsmith JR. 1995 Epidemiological evidence of radiofrequency radiation (microwave) effects on health in military, broadcasting and occupational settings. Int J Occup Environ Health 1:47-57.
- 120. Goldsmith JR. 1997 Epidemiologic evidence relevant to radar (microwave) effects. Env Health Perspect 105(Suppl 6):1579-1587.
- 121. Kundi M, Kild K, Hardell L, Mattsson M. 2004 Mobile telephones and cancer a review of the epidemiological evidence. J Toxicol Env Health, Part B 7:351-384.
- 122. Kundi M. 2004 Mobile phone use and cancer. Occup Env Med 61:560-570.
- 123. Behari J, Paulraj R. 2007 Biomarkers of induced electromagnetic field and cancer. Indian J Exp Biol 45:77-85.
- 124. Hardell L, Carlberg M, Soderqvist F, Hansson Mild K. 2008 Meta-analysis of long-term mobile phone use and the association with brain tumors. Int J Oncol 32:1097-1103.
- 125. Khurana VG, Teo C, Kundi M, Hardell L, Carlberg M. 2009 Cell phones and brain tumors: a review including the long-term epidemiologic data. Surg Neurol 72:205-214.
- 126. Desai NR, Kesari KK, Agarwal A. 2009 Pathophysiology of cell phone radiation: oxidative stress and carcinogenesis with focus on the male reproductive system. Reproduct Biol Endocrinol 7:114.
- 127. Davanipour Z, Sobel E. 2009 Long-term exposure to magnetic fields and the risks of Alzheimer's disease and breast cancer: Further biological research. Pathophysiology 16:149-156.
- 128. Yakymenko I, Sidorik E. 2010 Risks of carcinogenesis from electromagnetic radiation and mobile telephony devices. Exp Oncol 32:729-736.
- 129. Giuliani L, Soffriti M (Eds). 2010 Non-thermal Effects and Mechanisms of Interaction between Electromagnetic Fields and Living Matter, Ramazzini Institute Eur. J. Oncol. Library Volume 5, National Institute for the Study and Control of Cancer and Environmental Diseases "Bernardino Ramazzini" Bologna, Italy 2010, 400 page monograph.
- 130. Khurana, V. G., Hardell, L., Everaert, J., Bortkiewicz, A., Carlberg, M., Ahonen, M. 2010 Epidemiological evidence for a health risk from mobile phone base stations. Int. J. Occup. Environ. Health 16, 263-267.
- 131. Carpenter DO. 2010 Electromagnetic fields and cancer: the cost of doing nothing. Rev Environ Health 25:75-80.
- 132. Yakymenko, I., Sidorik, E., Kyrylenko, S., Chekhun, V. 2011. Long-term exposure to microwave radiation provokes cancer growth: evidences from radars and mobile communication systems. Exp. Oncol. 33(2), 62-70.
- 133. Biointiative Working Group, David Carpenter and Cindy Sage (eds). 2012 Bioinitiative 2012: A rationale for biologically-based exposure standards for electromagnetic radiation.

- 134. Ledoigt G, Belpomme D. 2013 Cancer induction molecular pathways and HF-EMF irradiation. Adv Biol Chem 3:177-186.
- 135. Hardell L, Carlberg M. 2013 Using the Hill viewpoints from 1965 for evaluating strengths of evidence of the risk for brain tumors associated with use of mobile and cordless phones. Rev Environ Health 28:97-106. doi: 10.1515/reveh-2013-0006.
- 136. Hardell L, Carlberg M, Hansson Mild K. 2013 Use of mobile phones and cordless phones is associated with increased risk for glioma and acoustic neuroma. Pathophysiology 2013;20(2):85110.
- 137. Davis DL, Kesari S, Soskolne CL, Miller AB, Stein Y. 2013 Swedish review strengthens grounds for concluding that radiation from cellular and cordless phones is a probable human carcinogen. Pathophysiology 20:123-129.
- 138. Morgan LL, Miller AB, Sasco A, Davis DL. 2015 Mobile phone radiation causes brain tumors and should be classified as a probable human carcinogen (2A). Int J Oncol 46(5): 1865-1871.
- 139. Mahdavi M, Yekta R, Tackallou SH. 2015 Positive correlation between ELF and RF electromagnetic fields on cancer risk. J Paramed Sci 6(3), ISSN 2008-4978.
- 140. Carlberg M, Hardell L. 2017 Evaluation of Mobile Phone and Cordless Phone Use and Glioma Risk Using the Bradford Hill Viewpoints from 1965 on Association or Causation. BioMed Res Int 2017, Article ID 9218486.
- 141. Bortkiewicz A, Gadzicka E, Szymczak W. 2017 Mobile phone use and risk for intracranial tumors and salivary gland tumors A meta-analysis. Int J Occup Med Environ Health 30:27-43.
- 142. Bielsa-Fernandez P, Rodriguez-Martin B. 2017 [Association between radiation from mobile phones and tumour risk in adults]. Gac Sanit. 2017 Apr 12. pii: S0213-9111(17)30083-3. doi: 10.1016/j.gaceta.2016.10.014. [Epub ahead of print]
- 143. Alegria-Loyola MA, Galnares-Olalde JA, Mercado M. 2017 [Tumors of the central nervous system]. Rev Med Inst Mex Seguro Soc 55:330-334.
- 144. Prasad M, Kathuria P, Nair P, Kumar A, Prasad K. 2017 Mobile phone use and risk of brain tumours: a systematic review of association between study quality, source of funding, and research outcomes. Neurol Sci. 2017 Feb 17. doi: 10.1007/s10072-017-2850-8. [Epub ahead of print].
- 145. Miller A. 2017 References on cell phone radiation and cancer.
- 146. Hardell L. 2017 World Health Organization, radiofrequency radiation and health a hard nut to crack (Review). Int J Oncol 51:405-413.
- 147. Pall ML. 2018 How cancer can be caused by microwave frequency electromagnetic field (EMF) exposures: EMF activation of voltage-gated calcium channels (VGCCs) can cause cancer including tumor promotion, tissue invasion and metastasis via 15 mechanisms. Chapter 7 in: Mobile Communications and Public Health, Marko Markov, Ed., CRC Press, pp 167-188.

# Why 5G will be even more dangerous than 4G due to increased pulsation

- 148. Osipov YuA, 1965 [Labor hygiene and the effect of radiofrequency electromagnetic fields on workers]. Leningrad Meditsina Publishing House, 220 pp.
- 149. Pollack H, Healer J. 1967 Review of Information on Hazards to Personnel from High-Frequency Electromagnetic Radiation. Institute for Defense Analyses; Research and Engineering Support Division. IDA/HQ 67-6211, Series B, May 1967.
- 150. Creighton MO, Larsen LE, Stewart-DeHaan PJ, Jacobi JH, Sanwal M, Baskerville JC, Bassen HE, Brown DO, Trevithick JR. 1987 In vitro studies of microwave-induced cataract. II. Comparison of damage observed for continuous wave and pulsed microwaves. Exp Eye Res 45:357-373.
- **151.** Grigoriev IuG. **1996** [Role of modulation in biological effects of electromagnetic radiation]. Radiats Biol Radioecol **36:659-670**.

- 152. Belyaev I. 2005 Non-thermal biological effects of microwaves. Microwave Rev 11:13-29.
- 153. Belyaev I. 2005 Non-thermal biological effects of microwaves: current knowledge, further perspective and urgent needs. Electromagn Biol Med 24(3):375-403.
- **154.** Markov MS. **2007** Pulsed electromagnetic field therapy: History, state of the art and future. The Environmentalist **27:465-475**.
- 155. Van Boxem K, Huntoon M, Van Zundert J, Patijn J, van Kleef M, Joosten EA. 2014 Pulsed radiofrequency: a review of the basic science as applied to the pathophysiology of radicular pain: a call for clinical translation. Reg Anesth Pain Med. 2014 Mar-Apr;39(2):149-59.
- 156. Belyaev, I. 2015. Biophysical mechanisms for nonthermal microwave effects. In: Electromagnetic Fields in Biology and Medicine, Marko S. Markov, ed, CRC Press, New York, pp 49-67.
- 157. Pall, M. L. 2015 Scientific evidence contradicts findings and assumptions of Canadian Safety Panel 6: microwaves act through voltage-gated calcium channel activation to induce biological impacts at non-thermal levels, supporting a paradigm shift for microwave/lower frequency electromagnetic field action. Rev. Environ. Health 3, 99-116. doi: 10.1515/reveh-2015-0001.
- 158. Panagopoulos DJ, Johansson O, Carlo GL. 2015 Real versus simulated mobile phone exposures in experimental studies. BioMed. Res. Int. 2015, article ID 607053, 8 pages. doi: 10.1155/2015/607053.
- 159. Batista Napotnik T, Rebersek M, Vernier PT, Mali B, Miklavcic D. 2016 Effects of high voltage nanosecond electric pulses on eukaryotic cells (in vitro): A systematic review. Bioelectrochemistry.