

## **5G Radiation Dangers – 11 Reasons To Be Concerned**

Like it or not we're rapidly moving into the world of 5G, or 5th generation cellular telecommunications.

Why? Because the frequency bandwidths used currently by cell phones and similar technologies are becoming saturated.

And also because we live in a world where people want more. 5G, and the Internet of Things (IoT) that goes with it, promises to give us more.

But more what? Super-Fast Download Speeds.

5G and IoT promises to connect us in our homes, schools, workplaces, cities, parks and open spaces to over a trillion objects around the world. It promises cars that drive themselves, washing machines that order their own washing powder and softener plus of course super fast downloads and streaming.

According to Fortune.com 5G will support at least 100 billion devices and will be 10 to 100 times faster than current 4G technology. (4G was already about 10 times faster than 3G).

It'll bring download speed up to 10 Gigabits per second. This would let us have an entire building of people send each other data in close to no time, thus improving productivity.

What is 5G? 5G offers mind-blowing data capabilities, practically unrestricted call volumes and near infinite data broadcast. It does this by 5G using largely untapped bandwidth of the millimeter wave (MMW), which is between 30GHz and 300GHz, as well as some lower and mid-range frequencies.

There are some other features of 5G you need to be aware of: Wireless Cell Antennas Galore

Millimeter waves (MMWs) do not travel well through buildings and they tend to be absorbed by rain and plants. This interferes with the signal. Added to this, high frequency waves like MMWs also have much shorter wavelengths that can't travel far.

To counter this problem 5G will utilize smaller cell stations (and the technology of beamforming) that'll scramble/unscramble and redirect packets of data on a no-interference path back to us. This could mean wireless antennas on every lamp post, utility pole, home and business throughout entire neighbourhoods, towns and cities.

### **MIMO Miniature Cell Towers**

Current 4G cell towers have about a dozen or so antenna ports to support all communication, the new, smaller 5G cell towers (or bases) will be MIMO (Multiple Input Multiple Output) and carry about a hundred ports. These towers will probably be about 4 feet tall as opposed to the usual 90 feet towers currently erected around us. Cells will be available within a 100 meter range and these smart antennas will be able to differentiate between various mixed-up signals – like radio waves and WiFi signals – in the air and beam them back in an orderly fashion so to speak.

### **Low Latency – High Efficiency**

5G will break down data and send it in smaller sizes to offer significantly reduced transmission times. Data will be sent with only a 1 millisecond delay instead of a 50 millisecond delay commonly found with 4G. With communication this fast, it'll allow machines to talk to each other with practically no room for error. As Marcus Weldon the CTO of Alcatel Lucent comments, "up until now, we've designed the networks for people and their needs, and now we're designing it for things."

## **The Dangers Of 5G – 11 Reasons To Be Concerned**

The USA is currently leading the way on 5G. At the June 2016 press conference where the Federal Communications Commission's (FCC) head Tom Wheeler announced the opening up of low, mid and high spectrum's. There was no mention of health effects whatsoever. But the dangers are real.

5G Radiation Dangers: Thousands of studies link low-level wireless radio frequency radiation exposures to a long list of adverse biological effects, including:

- DNA single and double strand breaks
- oxidative damage
- disruption of cell metabolism
- increased blood brain barrier permeability
- melatonin reduction
- disruption to brain glucose metabolism
- generation of stress proteins

Let's not also forget that in 2011 the World Health Organization (WHO) classified radio frequency radiation as a possible 2B carcinogen.

More recently the \$25 million National Toxicology Program concluded that radio frequency radiation of the type currently used by cell phones can cause cancer.

But where does 5G fit into all this? Given that 5G is set to utilize frequencies above and below existing frequency bands 5G sits in the middle of all this. But the tendency (it varies from country to country) is for 5G to utilize the higher frequency bands. Which brings it's own particular concerns. Here is my review of the studies done to date – 11 reasons to be concerned.

### **#1 – A Denser Soup of Electrosmog**

We're going to be bombarded by really high frequencies at low, short-range intensities creating a yet more complicated denser soup of electrosmog – as this diagram shows.

Source: Latest on 5G Spectrum – EMFields Ltd.

To work with the higher range MMW in 5G, the antennas required are smaller. Some experts are talking about as small as 3mm by 3mm. The low intensity is for efficiency and to deal with signal disruption from natural and man-made obstacles.

### **#2 – Effects on the Skin**

The biggest concern is how these new wavelengths will affect the skin. The human body has between two million to four million sweat ducts. Dr. Ben-Ishai of Hebrew University, Israel explains that our sweat ducts act like “an array of helical antennas when exposed to these wavelengths,” meaning that we become more conductive. A recent New York study which experimented with 60GHz waves stated that “the analyses of penetration depth show that more than 90% of the transmitted power is absorbed in the epidermis and dermis layer.”

The effects of MMWs as studied by Dr. Yael Stein of Hebrew University is said to also cause humans physical pain as our nociceptors flare up in recognition of the wave as a damaging stimuli. So we're looking at possibilities of many skin diseases and cancer as well as physical pain to our skin.

### **#3 – Effects on the Eyes**

A 1994 study found that low level millimeter microwave radiation produced lens opacity in rats, which is linked to the production of cataracts.

An experiment conducted by the Medical Research Institute of Kanazawa Medical University found that 60GHz “millimeter-wave antennas can cause thermal injuries of varying types of levels. The thermal effects induced by millimeterwaves can apparently penetrate below the surface of the eye.”

A 2003 Chinese study has also found damage to the lens epithelial cells of rabbits after 8 hours of exposure to microwave radiation and a 2009 study conducted by the College of Physicians and Surgeons in Pakistan conclude that EMFs emitted by a mobile phone cause derangement of chicken embryo retinal differentiation.

### **#4 – Effects On The Heart**

A 1992 Russian study found that frequencies in the range 53-78GHz (that which 5G proposes to use) impacted the heart rate variability (an indicator of stress) in rats. Another Russian study on frogs who's skin was exposed to MMWs found heart rate changes (arrhythmias).

### **#5 – Immune System Effects**

A 2002 Russian study examined the effects of 42HGz microwave radiation exposure on the blood of healthy mice. It was concluded that “the whole-body exposure of healthy mice to low-intensity EHF EMR has a profound effect on the indices of non-specific immunity”.

### **#6 – Effects on Cell Growth Rates**

A 2016 Armenian study observed MMWs at low intensity, mirroring the future environment brought about by 5G. Their study conducted on E-coli and other bacteria stated that the waves had depressed their growth as well as “changing properties and activity” of the cells. The concern is that it would do the same to human cells.

### **#7 – Effects on Bacteria Resistance**

The very same Armenian study also suggested that MMWs effects are mainly on water, cell plasma membrane and genome too. They had found that MMW's interaction with bacteria altered their sensitivity to “different biologically active chemicals, including antibiotics.” More specifically, the combination of MMW and antibiotics showed that it may be leading to antibiotic resistance in bacteria.

This groundbreaking finding could have a magnum effect on the health of human beings as the bandwidth is rolled out nationwide. The concern is that we develop a lower resistance to bacteria as our cells become more vulnerable – and we become more vulnerable.

### **#8 – Effects on Plant Health**

One of the features of 5G is that the MMW is particularly susceptible to being absorbed by plants and rain. Humans and animals alike consume plants as a food source. The effects MMW has on plants could leave us with food that's not safe to consume.

Think GMOs on steroids. The water that falls from the sky onto these plants will also be irradiated. A 2010 study on aspen seedlings showed that the exposure to radio frequencies led to the leaves showing necrosis symptoms.

Source: <https://www.hindawi.com/journals/ijfr/2010/83627>

Another Armenian study found that MMWs of low intensity “invoke(s) peroxidase isoenzyme spectrum changes of wheat shoots.” Peroxidase is a stress protein existing in plants. Indications are that 5G will be particularly harmful to plants – perhaps more so than to humans.

## **#9 – Effects on the Atmosphere and Depletion of Fossil Fuels**

Implementation of the 5G global wireless network requires the launching of rockets to deploy satellites for 5G. These satellites have a short lifespan which would require a lot more deployment than what we’re currently seeing. A new type of hydrocarbon rocket engine expected to power a fleet of suborbital rockets would emit black carbon which “could cause potentially significant changes in the global atmospheric circulation and distributions of ozone and temperature” according to a 2010 Californian study. Solid state rocket exhaust contains chlorine which also destroys the ozone.

The effects on the ozone are thought to be worse than current day CFC exposure.

Google’s Project Loon is said to bring Internet to rural and hard-to-access areas by using helium balloons. But these balloons only have a 10-month lifespan. We’re looking at a lot of helium being used here, more than what we can possibly have on Earth?

## **#10 – Disruption of the Natural Ecosystem**

Since the year 2000, there have been reports of birds abandoning their nests as well as health issues like “plumage deterioration, locomotion problems, reduced survivorship and death,” says researcher Alfonso Balmori. Bird species that are affected by these low levels, non-ionizing microwave radiation are the House Sparrows, Rock Doves, White Storks, Collared Doves and Magpies, among others.

But it’s not just the birds. The declining bee population is also said to be linked to this non-ionizing EMF radiation. It reduces the egg-laying abilities of the queen leading to a decline in colony strength.

A study conducted by Chennai’s Loyola College in 2012 concluded that out of 919 research studies carried out on birds, plants, bees and other animals and humans, 593 of them showed impacts from RF-EMF radiations. 5G will be adding to the effects of this electrosmog.

## **#11 – Most 5G Studies Misleading**

5G will use pulsed millimeter waves to carry information. But as Dr. Joel Moskowitz points out, most 5G studies are misleading because they do not pulse the waves. This is important because research on microwaves already tells us how pulsed waves have more profound biological effects on our body compared to non-pulsed waves. Previous studies, for instance, show how pulse rates of the frequencies led to gene toxicity and DNA strand breaks.

## **Live Testing Already Begun:**

AT&T have announced the availability of their 5G Evolution in Austin, Texas. 5G Evolution allows Samsung S8 and S8 + users access to faster speeds. This is part of AT&T's plan to lay the 5G foundation while the standards are being finalized. This is expected to happen in late 2018. AT&T has eyes on 19 other metropolitan areas such as Chicago, Los Angeles, Boston, Atlanta, San Francisco and so on. Indianapolis is up next on their 5G trail due to arrive in the summer.

Qualcomm has already demonstrated a 5G antenna system with about 27 decibel gain. According to ABI Research, is "about 10 to 12 more db than a typical cellular base station antenna." Not a good sign. Many more private sector companies such as HTC, Oracle, Sprint, T-Mobile are playing a role in the developing of testing platforms by contributing time, knowledge or money. In the UK the 3.4GHz band has been earmarked for 5G use with contracts awarded to O2, Vodafone, EE and Three. While the 2.3GHz band, awarded to O2, is likely to be used for 5G too in time.

## **Call to Action:**

Research and pre-testing is rampant by companies who are interested to tap into the lucrative waters of 5G. But few are willing to research its effects on health. The International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines remain essentially unchanged since 1998, not allowing for the recognition of radio frequency microwave radiation and MMWs as harmful unless there is a heating effect. But a few experts are speaking out.

Dariusz Leszczynski from the University of Helsinki and also former member of the International Agency Research on Cancer is one of them. He has brought to attention to ICNIRP intention to classify skin as limbs. Limbs are paid lesser attention to when classifying exposure levels. Research indicates that MMWs affect the skin and the eyes the most. If skin is classified as a limb, this will pave the way for industry giants to introduce even higher exposures and put more people at risk.

The Global Union Against Radiation Deployment from Space (GUARD) addressed a letter to the FCC in September of 2016, bringing to their attention the harm 5G will inflict. GUARD warned the FCC that 5G violates Article 3 of The UN Declaration of Human Rights which states that "everyone has the right to life, liberty and security of person." The document is laden with research, information and global support.

To learn how to write, call or email the relevant agencies to protest against the 5G deployment go here [parentsforsafetechnology.org](http://parentsforsafetechnology.org)

What Experts are Saying

## **Here's what experts are saying about 5G:**

"Along with the 5G there is another thing coming – Internet of Things. If you look at it combined the radiation level is going to increase tremendously and yet the industry is very excited about it.... they project 5G/IoT business to be a \$7 trillion business."

-Prof. Girish Kumar, Professor at Electrical Engineering Department at IIT Bombay

"The new 5G wireless technology involves millimeter waves (extremely high frequencies) producing photons of much greater energy than even 4G and WiFi. Allowing this technology to be used without proving its safety is reckless in the extreme, as the millimeter waves are known to have a profound effect on all parts of the human body."

-Prof. Trevor Marshall, Director Autoimmunity Research Foundation, California

“The plans to beam highly penetrative 5G milliwave radiation at us from space must surely be one of the greatest follies ever conceived of by mankind. There will be nowhere safe to live.”

-Olga Sheean former WHO employee and author of ‘No Safe Place’

“It would irradiate everyone, including the most vulnerable to harm from radiofrequency radiation: pregnant women, unborn children, young children, teenagers, men of reproductive age, the elderly, the disabled, and the chronically ill.”

—Ronald Powell, PhD, Letter to FCC on 5G expansion

## **How To Protect Yourself From 5G**

My 3 step approach for dealing with EMFs can be summarized as:

Understand your exposures. Understand the different types of EMFs and how they behave – hence the need to read (and share) articles like this one.

Measure – use an EMF meter to obtain readings and identify hotspots.

Mitigate your exposure. Which means either eliminate the source, move further away from the source of radiation or shield your body.

I recommend the same approach with 5G. There is a concern that current EMF meters are not able to measure the frequencies of MMWs. On this point, researcher Alasdair Philips from Powerwatch states “current RF meters cover the frequency ranges proposed for most 5G use in the next three years”.

## **Endless Possibilities For The Future**

5G may bring about a new form of industrial revolution, human connectivity and even a new reality. It offers endless possibilities for the future.

We do need more research. But already what is clear, as the research I’ve shared here indicates, is that there are real dangers.

Which is why it even more important to take action to protect yourself and your loved ones. Please share this article with your friends and family.

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Posted by Lloyd Burrell on May 12, 2017 under Cell phone radiation on Electricsense.com  
(schema en video achterwege gelaten door S.J.Woods)