

# The 5G War — Technology versus Humanity

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*Exposure to electromagnetic field (EMF) and radiofrequency (RF) radiation is an ever-growing health risk in the modern world. The Cellular Phone Task Force website<sup>1</sup> has a long list of governments and organizations that have issued warnings or banned wireless technologies of various kinds and under various circumstances, starting in 1993.*

A long list of organizations representing doctors and scientists are also among them, including an appeal for protection from nonionizing EMF exposure by more than 230 international EMF scientists to the United Nations in 2015, which notes that:<sup>2</sup>

“Numerous recent scientific publications have shown that EMF affects living organisms at levels well below most international and national guidelines.

Effects include increased cancer risk, cellular stress, increase in harmful free radicals, genetic damages, structural and functional changes of the reproductive system,<sup>3,4,5</sup> learning and memory deficits, neurological disorders, and negative impacts on general well-being in humans. Damage goes well beyond the human race, as there is growing evidence of harmful effects to both plant and animal life.”

A call for a moratorium on 5G specifically was issued in September 2017 by more than 180 scientists and doctors from 35 countries,<sup>6,7</sup> “until potential hazards for human health and the environment have been fully investigated by scientists independent from industry,” noting that “RF-EMF has been proven to be harmful for humans and the environment,” and that “5G will substantially increase exposure to radiofrequency electromagnetic fields (RF-EMF) on top of the 2G, 3G, 4G, Wi-Fi, etc. for telecommunications already in place.”

In an article<sup>8</sup> on the Environmental Health Trust’s website, Ronald Powell, Ph.D., a retired Harvard scientist of applied physics, notes “there is NO SAFE WAY to implement 5G in our communities; rather there are only ‘bad ways’ and ‘worse ways,’” and rather than argue about who should have control over its deployment, we should focus on preventing its employment altogether.

## Health Concerns Over 5G Abound

Wall Street analyst Sunil Rajgopal recently warned mounting health concerns may delay the implementation of 5G, Fortune magazine reports.<sup>9</sup> Some countries have already taken steps to slow 5G deployment due to health risks, Rajgopal notes. The question is, can it be

stopped?

5G testing was recently halted in Brussels, Belgium,<sup>10</sup> and Switzerland is delaying its 5G rollout in order to create a system to monitor radiation.<sup>11</sup> Syracuse, New York, is also attempting to set up some safeguards and has “negotiated the right to conduct on-demand safety inspections of 5G antennas,” to allay public concerns.<sup>12</sup> According to Forbes:<sup>13</sup>

“In New Hampshire, lawmakers are considering establishing a commission to study the health impacts of 5G networks. And Mill Valley, Calif., near San Francisco, last year banned new 5G wireless cells.”

Many other areas, however, have chosen to trust the Federal Communications Commission and the wireless industry trade association, CTIA, which has created a “Cellphone Health Facts” website citing research showing no risk. However, if you believe the FCC is assessing health risks, you’d be wrong.

At a recent senate commerce hearing (above), the FCC admitted that no 5G safety studies have been conducted or funded by the agency or the telecom industry, and that none are planned.<sup>14,15</sup> In a speech given at the National Press Club in June 2016, Tom Wheeler, former FCC chairman and prior head of the wireless industry lobbying group, made the agency’s stance clear when he said:<sup>16</sup>

“Stay out of the way of technological development. Unlike some countries, we do not believe we should spend the next couple of years studying ... Turning innovators loose is far preferable to letting committees and regulators define the future. We won’t wait for the standards ... ”

In light of the more than 2,000 studies showing a wide range of biological harm from EMFs, assurances from the FCC and the U.S. Food and Drug Administration that wireless radiation exposures, including 5G, is safe, seem disingenuous at best. As noted in a recent Counterpunch article:<sup>17</sup>

“Telecom lobbyists assure us that guidelines already in place are adequate to protect the public. Those safety guidelines, however, are based on a 1996 study of how much a cell phone heated the head of an adult-sized plastic mannequin. This is problematic, for at least three reasons:

- living organisms consist of highly complex and interdependent cells and tissue, not plastic.
- those being exposed to radiofrequency radiation include fetuses, children, plants, and wildlife – not just adult male humans.
- the frequencies used in the mannequin study were far lower than the exposures associated with 5G.”

## **What Level of EMF Can Humans Withstand?**

[EMF exposure](#) at many biological impacting frequencies, such as those that run cellphones

and Wi-Fi, has increased about 1 quintillion times over the past 100 years.<sup>18,19</sup> Unfortunately, EMF exposure is so widespread these days, it's virtually impossible to conduct controlled population studies anymore, as no population is truly unexposed or unaffected. This lack of a control group makes it very difficult to determine what the real-world effects are.

That said, one controlled exposure study has been done, revealing it's nowhere near as harmless as people think. At the beginning of the 20th century, there were two populations in the United States — rural and urban. Urban areas were by and large electrified, while rural areas were not electrified until around 1950.

[Dr. Sam Milham](#), an epidemiologist, painstakingly analyzed mortality statistics between these two populations over time, clearly showing there was a wide difference in mortality from heart disease, cancer and [diabetes](#) between these two groups. Then, as rural areas became electrified, the two curves merged.

Today, we not only live and work in electrified surroundings, we're also surrounded by microwaves from wireless technologies. Soon, 5G may be added to the mix, making exposures all the more complex and potentially harmful. As noted by Counterpunch:<sup>20</sup>

“5G radiofrequency (RF) radiation uses a ‘cocktail’ of three types of radiation, ranging from relatively low-energy radio waves, microwave radiation with far more energy, and millimeter waves with vastly more energy ...

The extremely high frequencies in 5G are where the biggest danger lies. While 4G frequencies go as high as 6 GHz, 5G exposes biological life to pulsed signals in the 30 GHz to 100 GHz range. The general public has never before been exposed to such high frequencies for long periods of time.”

## **Health Concerns Linked to 5G Exposure**

The added concern 5G brings is the addition of the millimeter wave (MMW). This bandwidth, which runs from 30 gigahertz (GHz) to 300GHz,<sup>21</sup> is known to penetrate up to 2 millimeters into human skin tissue,<sup>22,23</sup> causing a burning sensation.

This is precisely why MMW was chosen for use in crowd control weapons (Active Denial Systems) by the U.S. Department of Defense.<sup>24</sup> MMW is also used in so-called “naked body scanners” at airports.<sup>25</sup>

Research has shown sweat ducts in human skin act as receptors or antennae for 5G radiation, drawing the radiation into the body,<sup>26,27,28,29,30</sup> thereby causing a rise in temperature. This in part helps explain the painful effect. As noted by Dr. Yael Stein — who has studied 5G MMW technology and its interaction with the human body — in a 2016 letter to the Federal Communications Commission:<sup>31</sup>

“Computer simulations have demonstrated that sweat glands concentrate sub-terahertz waves in human skin. Humans could sense these waves as heat. The use of sub-terahertz (millimeter wave) communications technology (cellphones, Wi-Fi, antennas) could cause humans to percept physical pain via

nociceptors.

Potentially, if 5G Wi-Fi is spread in the public domain we may expect more of the health effects currently seen with RF/ microwave frequencies including many more cases of hypersensitivity (EHS), as well as many new complaints of physical pain and a yet unknown variety of neurologic disturbances.

It will be possible to show a causal relationship between G5 technology and these specific health effects. The affected individuals may be eligible for compensation.”

MMW has also been linked to:<sup>32,33,34,35,36</sup>

- Eye problems such as lens opacity in rats, which is linked to the production of cataracts,<sup>37</sup> and eye damage in rabbits<sup>38,39</sup>
- Impacted heart rate variability, an indicator of stress, in rats<sup>40,41,42</sup> and heart rate changes (arrhythmias) in frogs<sup>43,44</sup>
- Pain<sup>45</sup>
- Suppressed immune function<sup>46</sup>
- Depressed growth and increased antibiotic resistance in bacteria<sup>47</sup>

As noted in a recent Gaia.com article:<sup>48</sup>

“Many scientists understand that the electromagnetic radiation leaking through the doors of our microwave ovens are carcinogenic, and therefore, can cause cancer. Most of these scientists also believe that these waves are mutagenic, meaning they change the DNA structure of living beings.<sup>49</sup>

The launch of 5G will be similar to turning on your microwave, opening its door, and leaving it on for the rest of your life. There’s good reason why hundreds of scientists are taking action against the wireless industry.”

## **Understanding EMFs’ Mechanisms of Harm**

As explained in my 2017 [interview with Martin Pall](#), Ph.D., Professor Emeritus of biochemistry and basic medical sciences at Washington State University, the primary danger of EMFs in general is that it causes excess oxidative stress that results in mitochondrial dysfunction.

According to Pall’s research,<sup>50,51,52,53</sup> radiofrequency microwave radiation such as that from your cellphone and wireless router activates the voltage-gated calcium channels (VGCCs) located in the outer membrane of your cells.

According to Pall, VGCCs are 7.2 million times more sensitive to microwave radiation than the charged particles inside and outside our cells, which means the safety standards for this exposure are off by a factor of 7.2 million.

Low-frequency microwave radiation opens your VGCCs, thereby allowing an abnormal influx of calcium ions into the cell, which in turn activates nitric oxide (NO) and superoxide which react nearly instantaneously to form peroxynitrite<sup>54</sup> that then causes carbonate free radicals, which are one of the most damaging reactive nitrogen species known and thought to be a root cause for many of today's chronic diseases.

For an in-depth understanding of peroxynitrites and the harm they inflict, see "Nitric Oxide and Peroxynitrite in Health and Disease"<sup>55</sup> — a 140-page free access paper with 1,500 references written by Dr. Pal Pacher, Joseph Beckman and Dr. Lucas Liaudet.

One of its most significant hazards of peroxynitrite is that it damages DNA. The European REFLEX study published in 2004 revealed the nonthermal effects of 2G and 3G radiation are actually very similar to the effects of X-rays in terms of the genetic damage they cause.<sup>56</sup>

Your body has the capacity to repair that damage through a family of 17 different enzymes collectively called poly ADP ribose polymerases (PARP). However, while PARP work well, they require NAD+ for fuel and when they run out of NAD+ they stop repairing your DNA.

This in turn can lead to premature cell death, since 100 to 150 NAD+ molecules are needed to repair a single DNA strand break. [NAD+](#) is central to maintaining cellular and [mitochondrial health](#), so the fact that PARP consumes NAD+ to counteract EMF damage is an important concern.

### **Cancer Is Not the Primary Health Risk of EMF**

The [voltage in your body](#) appears to play a significant role in health and disease. Your body's production of electricity allows your cells to communicate and perform basic biological functions necessary for your survival. However, your body is designed to operate at very specific levels and frequencies.

It seems logical that being surrounded by man-made EMFs that are 1 quintillion times higher than the natural EMF environment of the Earth may interfere with your DNA's ability to receive and transmit biological signals.

While the controversy over EMF damage has centered around whether or not it can cause cancer, especially [brain tumors](#), this actually isn't your greatest concern. Since the damage is strongly linked to activation of your VGCCs, it stands to reason that areas where VGCCs are the densest would be most vulnerable to damage.

As it happens, the highest density of VGCCs are found in your nervous system, your brain, the pacemaker in your heart and in male testes. As a result, EMFs are likely to contribute to neurological and neuropsychiatric<sup>57</sup> problems, heart and reproductive problems.

This includes but is not limited to cardiac arrhythmias, anxiety, depression, autism, Alzheimer's and infertility. Indeed, this is what researchers keep finding, and all of these health problems are far more prevalent and kill more people than brain cancer.

What's more, seeing how many are already struggling with [electromagnetic hypersensitivity](#), saturating cities and suburban areas with MMW radiation will undoubtedly make the problem more widespread, and make life unbearable for those already feeling the

effects of wireless radiation.

### **Most Recent Media Ploy to Detract From 5G Concerns: Blame the Russians**

In a recent Medium article,<sup>58</sup> Devra Davis, Ph.D. — a well-respected and credentialed researcher on the [dangers of cellphone radiation](#) — highlights a recent media trend: Write off scientists warning about 5G dangers as “untethered alarmists ... linked to Russian propaganda.”

“Could it be a coincidence that following on the heels of the NY Times story, the Wall Street Journal and the UK Telegraph have echoed the same smear of guilt by association,” she writes,<sup>59</sup> adding:

“These otherwise credible media sources ignore the substantial body of science pinpointing hazards of wireless radiation and 5G detailed in independent journalistic investigations that have appeared extensively in media throughout Europe and been covered by major networks ...

Could the failure to report these critical 5G issues and correct misleading information regarding health effects of wireless and 5G in the New York Times have anything to do with their new joint venture with Verizon in 5G journalism, or the fact that the Times board of directors includes officials from Facebook, Verizon, Media Lab, and other stalwarts of the telecom industry, while Carlos Slim, head of some of the largest telecom firms in the world, has downsized and now owns just 15 percent of its stock?”

Davis also points out a clear difference between American and Russian scientific expertise with regard to EMF:

“The history of research on the environmental and public health impacts of radio frequency microwave radiation (‘wireless radiation’) reveals some uneasy parallels with that of tobacco.

In the 1950s and 1960s, scientists who showed the harmful impacts of tobacco found themselves struggling for serious attention and financial support. The validity of their views was only accepted after the toll of sickness and death had become undeniable.

For health impacts from wireless radiation, a similar pattern is emerging. Each time a U.S. government agency produced positive findings, research on health impacts was defunded.

The Office of Naval Research, the National Institute of Occupational Safety and Health, the Department of Health, Education and Welfare, and the Environmental Protection Agency all once had vibrant research programs documenting dangers of wireless radiation. All found their programs scrapped, reflecting pressure from those who sought to suppress this work.

Russian’s 50 years of research on electromagnetic radiation since the Cold War has led to their clear understanding that this exposure does have biological

effects. The Russian National Committee on Non-Ionizing Radiation Protection issued a 2011 Resolution<sup>60</sup> recommending persons under 18 not use a cell phone.”

## **Brain Cancer Risk Is Likely Real**

While heart disease, dementia and infertility overshadow the risk of brain cancer, the possibility of cancer still remains, and may be a far more significant concern for young children who are growing up surrounded by wireless technologies than we realize.

The fact is, we won't know for sure whether in utero and early cellphone use will increase brain cancer rates until a decade or two from now when today's youths have grown up. Mounting research suggests cellphone radiation certainly influences your risk, and there are a number of compelling anecdotal reports that are hard to ignore.

In her article,<sup>61</sup> Davis mentions Robert C. Kane, a senior telecom engineer “had willingly served as a guinea pig for Motorola and other companies developing new wireless technologies in the 1980s.”

He developed a type of malignant brain cancer the National Toxicology Program later confirmed was a side effect of [cellphone radiation exposure](#) (see video above). The NTPs results were published in 2018. Before his death in 2002, Kane published the book, “[Cellphone Radiation — Russian Roulette](#),”<sup>62</sup> in which he stated that:<sup>63</sup>

“Never in human history has there been such a practice as we now encounter with the marketing and distributing of products hostile to the human biological system by an industry with foreknowledge of those effects.”

## **FCC Is a Captured Agency That Cannot Be Trusted**

Davis also highlights another crucial problem, namely the fact that the FCC has been captured by the telecom industry, which in turn has perfected the disinformation strategies employed by the tobacco industry before it. She writes:<sup>64</sup>

“... [I]n 2015 a Harvard expose tracked the revolving door between the FCC and the telecom industry and concluded that the FCC is a captured agency and that ‘Consumer safety, health, and privacy, along with consumer wallets, have all been overlooked, sacrificed, or raided due to unchecked industry influence.’”

The book in question is “Captured Agency: How the Federal Communications Commission Is Dominated by the Industries It Presumably Regulates,” written by investigative journalist Norm Alster.<sup>65</sup>

As just one example, before his role as FCC chairman, Wheeler headed up the CTIA, which is the lobbying group for the wireless industry, which explains his commentary on 5G and why the FCC doesn't believe in studying its health risks and “won't wait for the standards.”

The book also shows how the telecom industry is manipulating public opinion by undermining the credibility of scientists that speak of dangers, cutting funds for research, publishing manipulated studies showing no harm and claiming “scientific consensus” of no harm when no such consensus actually exists. Naturally, the telecom industry also spends millions of dollars lobbying the FCC on issues that might impact its bottom line.<sup>66</sup>

## **5G Threatens Weather Prediction**

Interestingly, aside from potential health ramifications, a global 5G network will also threaten our ability to predict weather which, in addition to putting civilians at risk will also jeopardize the Navy.<sup>67</sup> According to a recent paper<sup>68</sup> in the journal Nature, widespread 5G coverage will prevent satellites from detecting changes in water vapor, which is how meteorologists predict weather changes and storms.

Davis quotes<sup>69</sup> Stephen English, meteorologist at the European Centre for Medium-Range Weather Forecasts: “This is the first time we’ve seen a threat to what I’d call the crown jewels of our frequencies — the ones that we absolutely must defend come what may.”

Alas, the FCC ignores such concerns and, according to Davis, “weather experts within the U.S. government are being muzzled.” In a recent letter to the FCC, Sens. Ron Wyden, D-Ore., and Maria Cantwell, D-Wash., urge the agency to rein in the expansion of wireless communications in the 24 GHz band for this reason.<sup>70</sup>

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## **Notes**

<sup>1</sup> [The Cellular Phone Task Force, Governments and Organizations that Ban or Warn Against Wireless Technology](#)

<sup>2</sup> [EMFScientist.org International Appeal to the UN May 11, 2015, updated January 1, 2019](#)

<sup>3</sup> [Environ Int. 2014 Sep; 70C:106-112](#)

<sup>4</sup> [Central European Journal of Urology 2014; 67\(1\): 65-71](#)

<sup>5</sup> [Fertility and Sterility January 2012; 97\(1\): 39-45.e2](#)

<sup>6</sup> [Scientists Warn of Potential Serious Health Effects of 5G, September 13, 2017 \(PDF\)](#)

<sup>7, 29, 48</sup> [Gaia.com May 14, 2019](#)

<sup>8</sup> [EHtrust.org, 5G and Its Small Cell Towers Threaten Public Health](#)

<sup>9, 13</sup> [Fortune May 22, 2019](#)



- <sup>10</sup> [The Inquirer April 15, 2019](#)
- <sup>11</sup> [Reuters April 17, 2019](#)
- <sup>12</sup> [Government Technology May 10, 2019](#)
- <sup>14</sup> [US Senate, Richard Blumenthal February 7, 2019](#)
- <sup>15, 17, 20</sup> [Counterpunch May 3, 2019](#)
- <sup>16</sup> [Prepared Remarks of FCC Chairman Tom Wheeler June 20, 2016 \(PDF\)](#)
- <sup>18</sup> [Electromagnetic Health January 11, 2014](#)
- <sup>19</sup> [Nourish Balance Thrive July 29, 2018](#)
- <sup>21, 32</sup> [Electric Sense May 12, 2017](#)
- <sup>22, 27, 31, 45</sup> [Environmental Health Trust, Letter to the FCC From Dr. Yael Stein MD in Opposition to 5G Spectrum Frontiers](#)
- <sup>23</sup> [Telecom Power Grab, 5G Fact Sheet](#)
- <sup>24</sup> [Environmental Health Trust 20 Facts About 5G Wireless](#)
- <sup>25</sup> [Science.howstuffworks.com, Difference Between Backscatter Machines and MMW Scanners](#)
- <sup>26</sup> [Phys Med Biol. 2011 Mar 7;56\(5\):1329-39](#)
- <sup>28</sup> [Principia-scientific.org April 2, 2019](#)
- <sup>30</sup> [Endoftheamericandream.com May 19, 2019](#)
- <sup>33</sup> [Eluxemagazine, Frightening Frequencies](#)
- <sup>34</sup> [ElectricSense, The Dangers of 5G, May 30, 2018 \(PDF\)](#)
- <sup>35, 41, 43</sup> [A 5G Wireless Future by Dr. Cindy Russell \(PDF\)](#)
- <sup>36, 42, 44</sup> [References List to A 5G Wireless Future by Dr. Cindy Russell \(PDF\)](#)
- <sup>37</sup> [Klin Oczna. 1994 Aug-Sep;96\(8-9\):257-9](#)
- <sup>38</sup> [Health Phys. 2009 Sep;97\(3\):212-8](#)
- <sup>39</sup> [Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi. 2003 Oct;21\(5\):346-9](#)

- <sup>40</sup> [Fiziol Zh SSSR Im I M Sechenova. 1992 Jan;78\(1\):35-41](#)
- <sup>46</sup> [Biofizika. 2002 Jan-Feb;47\(1\):71-7](#)
- <sup>47</sup> [Applied Microbiology and Biotechnology June 2016; 100\(11\): 4761-4771](#)
- <sup>49</sup> [Gaia.com December 3, 2018](#)
- <sup>50</sup> [Rev Environ Health. 2015;30\(2\):99-116](#)
- <sup>51</sup> [International Journal of Innovative Research in Engineering and Management, September 2015; 2\(5\)](#)
- <sup>52</sup> [J Cell Mol Med. 2013 Aug;17\(8\):958-65](#)
- <sup>53</sup> [Current Chemical Biology 2016; 10\(1\): 74-82](#)
- <sup>54</sup> [American Journal of Physiology 1996 Nov;271\(5 Pt 1\):C1424-37](#)
- <sup>55</sup> [Physiol Rev. 2007 Jan; 87\(1\): 315-424](#)
- <sup>56</sup> [JRS.BV EU Reflex Study Shows DNA Damage](#)
- <sup>57</sup> [Journal of Chemical Neuroanatomy September 2016; 75 Part B: 43-51](#)
- <sup>58, 59, 61, 63, 64, 69</sup> [Medium May 18, 2019](#)
- <sup>60</sup> [Resolution of Russian National Committee on Non-Ionizing Radiation Protection \(PDF\)](#)
- <sup>62</sup> [Cell Phone Radiation — Russian Roulette \(PDF\)](#)
- <sup>65</sup> [Entrust.org, Harvard Press Book on Telecom Industry Influence to the US FCC — Captured Agency by Norm Alster](#)
- <sup>66</sup> [Opensecrets.org January 23, 2018](#)
- <sup>67, 70</sup> [ZDnet.com May 14, 2019](#)
- <sup>68</sup> [Nature April 26, 2019](#)

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