EMF*D 5G

5G, Wi-Fi & Cell Phones: Hidden Harms and How to Protect Yourself

DR. JOSEPH MERCOLA

2020

Chapter 2

5G: THE SINGLE BIGGEST HEALTH EXPERIMENT EVER

Wireless devices, including cell phones and WI-FI routers, have been around for nearly two decades. You've had many years to integrate these useful technologies into your daily life. Yet suddenly it's very urgent that you change these behaviors. Why ?

The answer is simple: 5G. This latest wireless technology is on the verge of completely changing your electromagnetic reality.

The term **5G** is an abbreviation for *fifth generation*, which makes it sound like it is a simple improvement on 3G or 4G technology. But this is a misperception, because true **5G** is an entirely new creature that will use a different part of the electromagnetic spectrum than what is already in use.

The difference between 4G and 5G is the equivalent of the difference between a mountain stream of EMF exposure and a vast ocean of it.

This is because 5G will not replace existing wireless technology, but rather add to it. That means every single person, not to mention every microbe, insect, animal, and plant, will experience an exponential increase in EMF exposure, at a frequency that has not been tested for its long-term health ramifications.

ANOTHER CREATURE ALTOGETHER: MILLIMETER WAVES

There are some phones and devices that claim to be 5G now, but most of them are still using LTE (long-term evolution) technology, which uses the same underpinnings as 3G and 4G. Whereas LTE cellular service (and most current iterations of 5G) use radio waves thar are 6 GHs or less, eventually 5G will add a bandwidth between 24 and 28 GHz, and later it is expected that a bandwidth above 30 GHz will be added as well.

These frequencies are structurally *very differen*t from the ones that power 3G and 4G networks.

Part of the frequencies that **5G** will ultimately use will be ***millimeter waves*** (MMWs), so called because the length of one wave is less than 10 millimeters. This is opposed to the lower frequencies that are currently used (and will continue to be used), which have lengths that are measured in the tens of centimeters.

The main reason that telecommunications companies are turning to *MMWs* is that their bandwidth is significantly larger than the radio waves thar current cell phone and Wi-Fi technologies use. That means a lot more information can be carried on them, enabling data to be transmitted in larger amounts, at a much faster speed, and with significantly shorter wait times.

With **5G,** a large number of users in small geographic areas will be able to use *MMWs* at the same time much more efficiently than 3G or 4G technology is capable of. That means people in a packed stadium for an event will be able to make and receive calls and download data without lag time. It also means that hundreds of thousands of smartphones and appliances will be able to transmit and receive information within one small geographic area.

MMWs present some challenges, however. Primarily they are easily obstructed by physical structures such as buildings, trees, and the walls in your office or home. They can also be easily absorbed by rain and humidity.

This means that significantly more antennas will be required to provide consistent and reliable coverage --not just a few more, but literally *billions* of additional antennas compared to the 300,000 towers that exist today.

THE SMALL CELLS ARE COMING.

In order to ensure connectivity, the 5G network will require the installation of *"small cell"* stations every 300 feet or so, or every 3 to 10 houses in cities. They are called small cells because unlike the 90--foot cell towers that 3G and 4G technology use, which are usually spaced one to two miles apart, thee antennas are small enough to be mounted on top of utility poles, lampposts, buildings, and bus stops.

Whereas existing cell phone towers each have a dozen antennas--eight for transmitting data and four for receiving-- each small cell has enough room for about 100 antenna ports.

Many of these small cell stations will have 4G transmitters that allow them to geolocate mobile devices with much more precision than what cell companies currently get from

existing cell towers. Once located, the **5G** antenna will then beam signals and information to that mobile device with very high speed; 4G and **5G** technology work together, and many 4G transmitters will be updated to **5G** over the years.

Ultimately many, if not most, homeowners can expect to end up with a **5G** cell base mounted right outside or very near their home. Workplaces and educational institutions will also be saturated with small cells. Urban areas will be hit especially hard.

Because MMWs have a smaller wavelength than the frequencies used in 3G and 4G technologies, the antennas needed to broadcast them are also small. Each small cell antenna uses multiple--input multiple--output *(MIMO)* technology, which allows several users to send and receive information from each antenna simultaneously.

Because each antenna user *MIMO* and each base has a hundred antennas, this is known as *massive MIMO*, which helps exponentially expand the number of users and bits of information the network can serve.

It also means that there is a high probability of interference with all those signals bouncing around in close proximity to each other. That's where a solution called *beamforming* comes in. Beamforming takes one signal and concentrates it into a beam that takes the most direct route to a user--kind of like CPS for cellular signals.

In fact, MMW signals cannot easily penetrate typical building materials like wood, brick, stucco, and even regular glass without being beamformed.

What is important to keep in mind is that these new signals from all these extra antennas and base stations will be in addition to the EMF swamp that we are all already swimming in. This is because 5G will not replace existing wireless technology, but will merely add to it.

Specifically, small cell stations will have never--ending 4G LTE antennas constantly spraying homes with RF signals used to geolocate mobile devices, although, granted, the power of the signal will be somewhat lower than that emitted by standard 4G cell towers.

But these small cell antennas will be so much closer to peoples homes, especially second--story bedrooms, that RF from continuous 4G transmitters will be flooding bedrooms with strong RF signals, much stronger than the 4G signals from nearby existing macro cell towers.

Small cells will also send beamformed 5G signals into homes, but primarily when a device inside the home initiates a wireless connection (for example, when someone places a call). So the 5G data signals won't be constant like the 4G signals will be. When 5G data signals do come into your home, they will be strong, focused, and harmful.

Both the 4G and 5G signals emitted by small cells are highly problematic. As resistance to the widespread adoption of 5G and the infrastructure it requires grows (and it is already growing strong--see the list of groups opposed to 5G in the Resources section), 5G activists are focusing their efforts as much on preventing 5G transmitters on those same and additional standalone small cells from going up in residential neighborhoods.

THE PROMISE OF 5G

If 5G is so problematic, why are we racing to adopt it?

If you don't consider the health ramifications, 5G seems like a pretty appealing development. It promises to reduce many of the frustrations of current connectivity challenges. such as dropped calls and slow download times. and replace them with a long list of tempting benefits, including the following:

- **Faster connections.** The claim is that 5G will offer download speeds of 20 gigabytes (GB) per second as opposed to a limit of 1 GB per second with LTE. That means you can download a high--definition movie in about a second, compared to 10 minutes with LTE.

- **Greater bandwidth.** As I've mentioned, MMW's have larger bandwidth, which means more users will be able to use the network at the same time.

- **Low latency.** Latency is the time it takes a sent message to be received. Telecom companies claim that the optimal latency for 5G will be less than a millisecond, which can be up to 100 times faster than 4G. That means there will be virtually no delay in transmission and reception, which then enables all manner of technology that requires near--instantaneous communication, such as driverless cars communicating with each other in real time while driving so as to avoid accidents.

- **A massive internet of Things.** The grater bandwidth will enable the internet of Things-- or the everyday devices and appliances that become Internet--enabled--to become truly massive. In fact, 20.4 billion devices are projected to be connected by 2020.

  Thanks to 5G, we'll have washing machines that order their own detergent, refrigerators that monitor their supply levels, dialysis pumps that pump themselves, and robots that enable doctors to perform surgery remotely, among other technological developments that haven't even been imagined yet.

- **Smart cities.** The Internet of Things will extend beyond the walls of your home, into your city and onto your roads. Smart utility meters are already sending usage information from individual homes back to utility companies.

  In a 5G--enabled future, street lights, water mains, sewer systems, and runoff pipes will all be sending continuous information to utility companies so that the city's energy grid and infrastructure can be monitored on a minute--by--minute basis, as can traffic, parking spaces, and public surveillance.

  All this efficiency will require continuous transmitting and receiving of signals. The rollout of smart cities has been in the works since 2017, when Verizon announced its plans to roll out 5G in 11 cities, including Atlanta, Miami, Seattle, and Washington, D.C. while AT&T declared in 2018 it would pilot the technology in 12 cities, including Charlotte and Raleigh, North Carolina, as well as Oklahoma City and another 9 cities by mid-2019.

- **A connected rural population.** As I'll discuss in greater detail later in the chapter, the FCC is talking a big game about how 5G will increase broadband access in rural areas of the country

At its root, 5G is about ushering in a new era of computer--assisted living, as well as what's already being touted as a "fourth industrial revolution" as every part of manufacturing will also be impacted by the adoption of smart technologies.

THE REAL REASON 5G IS BEING DEPLOYED— IT'S NOT FOR YOUR BENEFIT

The telecom industry is touting 5G as a necessity form modern life-- something that will take us out of the "stone ages" of technology into a new frontier of appliances that do much of our everyday labor for us. But all this posturing about the public good is really just a ruse for creating ever--higher demand for connectivity and the products that are equipped to capitalize on that connectivity.

It's also about creating a captive audience. Not having to install cable saves money for the telecom companies. As the website TelecomPowerGrab.org put it:

- 5G will not necessarily bring broadband to underserved or rural communities.... It will not solve the digital divide.... And 5G will not immediately improve cell phone service, or assist first--responders in an emergency.

- Then what's the real purpose of 5G? This massive build--out of "small cell" wireless infrastructure is to enable telecom companies to beam their signals into homes and apartments without having to install a cable**.** *It's that simple.*

And that's all after 5G is a reality. Now, as it is being built out, there are vast amounts of money being spent and earned. The investment required to upgrade the infrastructure necessary to fulfill the promise of 5G connectivity is estimated at $200 billion a year according to a study by IHS Markit and commissioned by Qualcomm Technologies.

Small cells, antennas, chips, satellites, and all--new hardware (phones, appliances, utility meters, and cars) will be required to communicate with the signals transmitted by the new hardware. For that investment, the same report estimates that 5G will produce $12.4 trillion in global economic output by 2035 and produce as many as 22 million jobs. Once 5G is up and running, it is predicted to produce $250 billion annually by 2025 just for providing the service.

Make no mistake, 5G is absolutely big business. It isn't about human good; it's about the wireless industry's bottom line. Here's how former FCC Chairman Tom Wheeler described it in a speech at the National Press Club in 2016:

> *If something can be connected, it will be connected in the 5G world; but with the hundreds of billions of microchips connected in products from pill bottles to plant waterers, you can be sure.... the biggest Internet of Things application has yet to be imagined....*
>
> *To make this work, the 5G build-out is going to be very infrastructure intensive, requiring massive deployment of small cells..... The United States will be the first country in the world to open up high--band spectrum for 5G networks and applications, and that's damn important.*

…..Chillingly, he added, "we won't wait for the standards."

YOU WON'T BE ABLE TO OPT OUT OF 5G COVERAGE OR THE RADIATION THAT COMES WITH IT

A big piece of that "massive deployment". Wheeler referred to is low-orbit satellites. Because MMWs can't travel very far as they are absorbed by humidity and rain and can't penetrate buildings, satellites will be required to transmit and receive signals to and from users on the Earth in order to offer blanket coverage of urban and rural areas.

And not just a couple of satellites, either, but as many as 50,000, launched by companies including SpaceX, OneWeb, and Boeing. Although it sounds futuristic, these satellites have already begun to be launched into space: The first operational satellites were launched by OneWeb in February 2019 and SpaceX in May 2019.

These satellites will ultimately blanket the entire Earth in a field of MMW radiation that will be impossible to escape from.

In an open letter. to medical organizations by the Global Union Against Radiation Deployment from Space (GUARDS), an international coalition again global Wi-Fi from space, scientists describe these satellites "flooding the planet with microwave radiation" as a violation of human rights:

> *Space-based microwave radiation deployments threaten to inundate the planet with RF radiation without informed individual consent or a meaningful option for individual avoidance.*

5G ANTENNAS WILL EVEN INFILTRATE YOUR HOUSE

You may be thinking that since MMWs have difficulty penetrating through walls that you might be protected inside your home. Sadly, this is not the case. So-called smart appliances that use 5G technology will essentially turn your kitchen, laundry room, and outer walls into small cells.

Even the light bulbs in your home may become 5G transmitters. Starting in 2017, researchers at Brunel University London began developing light bulbs that use both visible light communication (VLC), also known as Li-Fi, which uses the rapid flickering of LED light to transmit digital communication, and MMW 5G technology to create high-speed home wireless networks.

Even if you use non-LED light bulbs and don't purchase smart appliances, MMWs may be able to find their way into your house. As reported by Alasdair Philips, technical director of EMFields Solutions:

> Whether mm-waves will penetrate homes depends on many factors. Above 30 GHz the waves can slip through long slots such as those around PVC window frames as the metal cores are surrounded just by PCV extrusions. This makes it difficult to shield at the scale of housing.

There truly may be no escape.

Quiz: A primary physical effects of 5G, which relies primarily on the bandwidth of the millimeter wave, that many may be able to sense is:

Coldness, Paralysis, Hallucinations, Pain, All of the above

THE HEALTH DANGERS OF MMW EXPOSURE

As of this writing, I am unaware of any studies that look at the effects of prolonged exposure to MMWs, much less at the effects of MMW exposure that happens at the same time as exposure to other common EMF frequencies (such as those emitted by 4G phones).

However, there are some things we already know about the health effects of MMWs. Ironically, MMWs have been used in cardiovascular disorders, and cancer, and there are journals devoted to this subject in that part of the world.

Researchers have examined the health effects of this treatment. Their studies found that up to 80% of people can sense the presence of MMWs on their skin, as well as increased electro-hypersensitivity, particularly in postmenopausal women.

Russian scientists also conducted research as early as the 1970's on the health effects of exposure to millimeter radiation. This research wasn't available for decades because the U.S. Central Intelligence Agency collected and translated the published research but did not declassify it until the 2010s

A 1977 paper by the Russian researcher N.P. Zalyubovskaya, which was declassified in 2012, compared the effects of radiation in the range of 5 - 8 millimeters and density of 1 milliwatt/cm2 on rats and mice that were exposed for 15 minutes a day for 60 days and people who worked with millimeter generators. The study reported:

> *Morphological, functional, and biochemical studies conducted in humans and animals revealed that millimeter waves caused changes in the body manifested in structural alterations in the skin and internal organs, qualitative and quantitative changes of the blood and bone marrow composition, and changes of the conditioned reflex activity, tissue respiration, activity of enzymes participating in the processes of tissue respiration and nucleic metabolism. The degree of unfavorable effects of millimeter waves depended on the duration of the radiation and individual characteristics of the organism.*

In the minimal additional research recently conducted on the subject, MMW technology was linked to a number of potential health problems, including:

- Eye problems such as lens opacity in rats, which is linked to the production of cataracts and eye damage in rabbits
- Impacted heart rate variability, an indicator of stress, in rats and heart rate changes (arrhythmias) in frogs.
- Modified structure and function of cellular membranes.
- Suppressed immune function
- Effectos on bacteria, including depressed growth and increased antibiotic resistance.

No studies have been done to assess what might be a safe threshold for MMW exposure, a fact that led Washington State University biochemistry professor Dr. martin Pall, one of the leading voices on the dangers of EMEs, to declare:

> *Putting in tens of millions of 5G antennae without a single biological test of safety has to be about the stupidest idea anyone has had in the history of the world.*

Research compiled by th founder of ElectricSense.com and author of EMF Practical Guide Lloyd Burrell and others suggests the proliferation of 5G could turn into nothing short of a public health disaster.

MMW EXPOSURE CAN CAUSE PAIN

MMWs are known to penetrate human skin tissue at a depth of 1 to 2 millimeters, and to cause pain in the skin. This is likely because MMWs trigger the nerve cells in the skin known as *nociceptors* that alert the brain of potentially damaging stimuli by eliciting a pain response.

Another suggested reason for the pain response es that sweat ducts in human skin act as antennae when they come in contact with MMWs. In a 2016 letter to the FCC, Dr. Yael Stein of the Hadassah Medical Center in Jerusalem, Israel, who has studied 5G MMW technology and its interaction with the human body, wrote:

> *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 (cell phones, 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 cases of hypersensitivity (EHS), as well as many new complaints of physical pain.*

(((*sub-terahertz waves:* The sub-THz spectrum between 90 GHz and 300 GHz offers opportunities for huge bandwidths, up to several tens of GHz, which is required to increase data rates and network capacities beyond 5G performance. The aggregation of all possibly

allocated sub-THz bands should enable achievement of the 1-Tbps wireless communication. **)))**

The U.S. Department of Defense knows very well that MMWs cause pain, because it uses these extremely high frequencies in crowd control weapons known as the Active Denial System (ADS). The ADS has the ability to cause a severe burning sensation that feels almost as if the skin might catch on fire. As a result, people exposed to the ADS will instinctively retreat.

5G COULD ALTER ALL BIOLOGICAL LIFE AND CHANGE THE ENVIRONMENT IN UNFORESEEN WAYS

As you'll learn more about in Chapter 4, it's not just human health that's at stake, but also insects, plants, animals, and microbes, especially since MMWs are absorbed by both plants and rain. Widespread MMW exposure could even pose a danger to the food supply via its potential absorption by plants. Studies have already shown that MMWs may invoke stress protein changes in plants such as wheat sprouts.

Insects, being millimeter-size creatures, serve as mini-antennas for MMWs. A recent review of the world literature on plummeting insect populations predicts the extinction of 40 % of the world's insect species over the next few decades, even without the implementation of 5G.

Because humans and animals rely on plants for food, the use of 5G could well result in foods' nutritional value being degraded further than it already is, due to our industrial agriculture practices depleting soil nutrients and coating our environment with harmful pesticides. Or worse, it could result in a radical reduction of our ability to produce enough food.

And, as I will cover in Chapter 4, low levels of no-nionizing radiation have already been linked to disturbances and health problems in birds and bees, with bees in particular being problematic for human health because of the crucial role they play in pollinating so many of the plants needed to provide our food.

THE FCC GIVETH, AND THE FCC TAKETH AWAY

In reality, the urgency the FCC claims to have about bringing broadband to underserved populations appears to be a cover for rushing through legislation that gives more power and money to the wireless industry and takes away autonomy and revenue from the states, cities, and towns that own the property that will house 5G infrastructure.

As FCC Chairman Ajit Pai said in a September 2018 press conference to announce the FCC's 5G Fast Plan: *"We cannot let today's red tape strangle the 5G future."*

In 2018, the FCC passed rules that cap the fees local jurisdictions can charge telecom companies for housing small cells to $270 per year --when municipalities had routinely been getting a few thousand dollars for each site. This new policy also set a constrictive timeline for cities and counties to approve the addition of small cells to existing structures (60 days) as well as newly constructed sites (90 days)

Worse yet, it virtually eliminated the rights of cities to say where 5G antennas are allowed and where they aren't. As a result, citizens will not be able to prevent installation of 5G cell bases outside their homes.

Multiple cities, including Los Angeles, sued to overturn these new rules. But in January 2019, the U.S. Court of Appeals for the 10th Circuit sided with the FCC and the wireless industry, essentially abandoning the public's health.

EVEN TELECOMMUNICATIONS EXECS ADMIT THEY'VE DONE NO SAFETY STUDIES

Speaking at a press conference in December 2018 regarding 5G technology and its impact on the American people and economy, U.S. Senator Richard Blumenthal of Connecticut said:

> *The stark simple fact is, the health hazards are unknown and unstudied, and that is a sign of neglect and disregard on the part of the Federal Communications Commission that seems unacceptable..... There have been no answers so far, the FCC has basically said everything's fine, but in order to reach a conclusion about the health and safety of this new technology, we need fact.*

Two months later, during a February 7, 2017 hearing of the **Senate** Commerce, Science, and Transportation Committee, Blumenthal questioned telecommunications industry representatives about whether they'd invested any money into studying the health effects of their much-touted 5G rollout.

> *How much money has the industry committed to supporting additional independent research ongoing? Has it been completed? And where can consumers look for it?*

To which one of the lobbyists replied:

> *Safety is paramount..... We rely on the findings of the FDA and others.... to keep all of us safe. There are no industry--backed studies to my knowledge right now.... We're always for more science. We also rely on what the scientists tell us.*

So here we have the truth of the vicious cycle that the wireless industry has created. They have captured the **Federal Communications Commission (FCC),** as we'll discuss more in Chapter 3, and they use the FCC's claim of proof of safety as justification for the 5G deployment.

This is an absolutely brilliant business strategy but beyond devastating from a health perspective. (You'll learn more about the many tactics the telecom industry uses to present a narrative that its technologies are safe in Chapter 3.)

Blumenthal pressed: *"So, essentially, the answer to my question-- How much money?--zero."*

And again, the concession: *"to my knowledge there's no active studies being backed by industry today."*

Ultimately, Blumenthal summed up our 5G travails quite succinctly: *"We're kind of flying blind here, as far as health and safety is concerned."*

THE SCIENTIFIC COMMUNITY IS SPEAKING OUT BUT… IS ANYONE LISTENING?

The scientific community is also concerned about the 5G rollout. In fact, in 2017 more than 180 doctors and scientists from 35 countries signed a petition that calls upon the European Union to enact a moratorium on the rollout of 5G due to the potential risks to wildlife and human health. In it, they wrote:

> *We the undersigned, more than 180 scientists and doctors from 35 countries, recommend a moratorium on the roll--out of the fifth generation, 5G, for telecommunication until potential hazards for human health and the environment have been fully investigated by scientists independent from industry.*

And as of October 29, 2019, 171,798 scientists, doctors, environmental organizations, and citizens from 201 nations and territories have signed an International Appeal to Stop 5G on Earth and in Space.

SMALL REASONS FOR HOPE: A BRIEF HISTORY OF RESISTANCE TO 5G

Although 5G appears to be as unstoppable as a runaway freight train, there are some city and national governments around the world and in the U.S. who have at least constructed some speed barriers.

Florence, Italy, Netherlands, Germany, Switzerland, Rome, Italy, Russia, Belgium, San Francisco, California, Hallandale Florida, Montana, Portland, Oregon, Palos Verdes California, New Hampshire, Fairfax, California, San Rafael California, Sonoma, California, San Anselmo and Fairfax California, Burlington, Massachusetts, Booneville Arkansas, Mill Valley California, Petaluma, California, Monterrey California, Walnut California, Palm Beach Florida, Pennsylvania, Mason Ohio, Warren, Connecticut.

THE BEST ALTERNATIVE TO 5G ---FIBER OPTIC NETWORKS

To be clear, I'm not suggesting that we go back to our pre--Wi-Fi ways. rather, I believe the best way for us to improve connectivity with safer, more reliable, and faster service for all Americans is to use fiber--optic cables instead of small cells broadcasting 4G and MMWs.

This isn't just a theory. Two American cities have introduced municipal fiber--optic broadband systems to great success: Chattanooga, Tennessee, and Longmont, Colorado. Chattanooga's municipal electric company, the Electric Power Board, built the system with assistance from federal grant money.

In the first three years of the broadband network's existence (2009--2012), home values in Chattanooga increased 14% and median household income rose 13.5%, even as the state government cut nearly 3,000 jobs. In 2014, Longmont Power & Communications rolled out NextLight, its municipal broadband system that allows residents to download data at a rate of one gigabit per second for about $50 a month.

A 2018, 156--page report by the National Institute for Science, Law, and Public Policy provides an excellent, in-depth look at the benefits of a wired Internet system over the wireless one we seem hell bent on making the status quo for decades to come. In this report, the author, Timothy Schoechle, Ph.D., writes:

> *Wired infrastructure is inherently more future-proof, more reliable, more sustainable, more energy--efficient, and more essential to many other services. Wireless networks and services are inherently more complex, more costly, more unstable, and more constrained....*
>
> *Millimeter wave (e.g., 5G wireless) backhaul is at best an on-the-cheap solution favored by corporations looking for short-term profits. It is wholly inadequate for a number reasons, among which is that it depends on an invasive and unstable complex millimeter wave hardware/software prone to (sometimes-planned) obsolescence.*
>
> *This complex approach contrasts sharply with the simplicity of basic future--proof fiber/hardwired facilities. At the same time, the wireless approach provides fewer jobs (most of its jobs are in the area of technical/software) and is subject to line--of--sight*

limitations, interference, asymmetric service, slow data rates, congestion problems, and potential public health risks.

You may fear that wired connections are bound to be slower than the 5G speeds we've been promised by the FCC, Cellular Telecommunications Industry Association (CTIA), and telecommunications companies, but even ancient phone lines have been shown to be able to deliver gigabit data rates, and fiber--optic cables have a proven ability to deliver 1.4 terabits of data per second, orders of magnitude higher than 5G.

Any reductions in speed and wait times that wired systems may have over 5G are well worth the trade--off in public and environmental health. If government--whether it be municipal, state, or national--invested in a wired infrastructure, we'd ensure that the Internet remains accessible to all, instead of at the mercy of a handful of companies determined to push their moneymaking agenda over concerns of the public good.

We simply need more resources directed to improve fiber--optic technology. Recent simple innovations of using a vibrating plow that requires only one person and equipment rental to hook up your home to the central neighborhood fiber--optic line will serve to minimize the cost of connecting fiber--optic cables in your home.

The ray of hope here is that there are ways to have the connectivity you've come to love and rely on that don't inflict massive amounts of harm on living creatures on this planet.

Know that as you continue to read this book, you'll learn ways to protect your body from the threat of wireless technologies--including 5G--from the inside out, as well as ways to reduce your exposure and the damage it can cause.

But first, I want to dive a little deeper into how we ended up living in such an EMF-saturated swamp in the first place. It will be even more of a wake-up call that we shouldn't allow the wireless industry to prioritize its profits over our health.