

Dear City Council members and City manager,

Members of Stop 5G Mendocino are asking you to form a subcommittee with members of City Council and Planning Committee to keep abreast of the new laws and changes and address them in your Aesthetic Guidelines, Resolution, and Ordinance in regards to Small Wireless Facilities and ongoing use of City's Rights-of-Way for Small Wireless Facilities.

Some information was presented at a Special City Council meeting on 4-12, at three City Council meetings on 4-22 & 5-13 and 8-12 (Public Hearing), and at a Public Works & Facilities Committee meeting on 9-11. Some of these were attended by various community members that gave various suggestions/requests, but not many of those were followed up. Three community members Helen Sears, Justine O. Battersby and I were allowed to present to the Public Works & Facilities Committee our research. We asked for a subcommittee as we feel it is crucial to protect our town from needless RF-EMF radiation. At the 9-11-19 Public Works & Facilities Committee meeting mayor Will Lee suggested to keep you (city council), as well as the planning commission in the loop as well. In the interest not to overwhelm you with the new laws/changes we have opted so far not to do that, but realize that a subcommittee is very much needed.

We do not approve with the wording of the Aesthetic Guidelines, Resolution, and Ordinance yet and are concerned that there is not much time left between now & October 28 to work on these. We realize that the time is ticking (do to shot clock dates). We asked several times that the City would connect with a lawyer and expert in those matters, but unfortunately other than a few e-mails/phone calls this sharing of information with members of the Public Works & Facilities Committee for various reasons was not possible. It is crucial to have a map depicting residential and business zone, the coastal zone, the current antennas, the known future antennas, the area of the downtown wi-fi, etc.

We are also concerned that the public has not been informed much as they will be affected by these new facilities. It is crucial that the City Council and the Planning Commission are informed as well. Fort Bragg, like all U.S. towns, is forced to adopt a resolution, an ordinance, guidelines and a fee schedule and will shortly be inundated by companies who want to make money and force the City to accept their proposals. The only tool available to the City is to restrict antennas do to aesthetic guidelines.

The Federal Communications Commission (FCC) estimates that millions of these small cell wireless transmitters emitting 5G (5th. generation) will be built in our rights-of-way in front of our homes and no one is being told about the devastating health consequences of that. According to the Telecommunications Act of 1996 it is "illegal" to use environmental effects and even health when trying to block a cell antenna or tower even though our own federal health agency now has "clear evidence of statistically significant carcinogenic effects" from 3G let alone 5G.

Laws have been passed making it illegal for local authorities to take their testimony into consideration. 5G will add another layer of wireless radiation, and will not replace 1G, 2G, 3G and 4G. It will emit higher and pulsed non-ionizing radio frequency submillimeter and millimeter microwaves (10 to 100 times stronger) in order to transmit data at superfast speeds. Radiation from small cells is not small. Densified 4G and 5G antennas are NOT necessary in neighborhoods because RF microwave radiation from 5G antennas transmits 3,000 feet and RF-EMF from 4G transmits out many miles.

According to the "safety" guidelines adopted by the FCC in 1996, radio and microwave frequencies used for wireless technology, are harmful only if they create a temperature change in tissue. This is known as the thermal effect. These guidelines were already obsolete when adopted. The non-thermal harm is scientifically proven including by studies of our own government. FCC guidelines have not been updated in over 30 years. 5G is not safe for people, animals or plants.

Governor Brown vetoed Senate Bill (SB) 649, but the federal government is enacting laws to make wireless facilities a permitted use in all public rights-of-way. To date, most wireless facilities have been located on private property at some distance from homes and businesses. In order for them to be spaced less than 100 meters apart as required by 5G, however, they will now be located on the sidewalk directly in front of homes and businesses (on street lights, utility poles, bus stops, roof tops, sides of buildings, etc.) and close above the heads of pedestrians, including mothers with babies.

Lloyd's of London, Crown Castle, nor Swiss Re insurance companies will cover any damage or illness caused by electromagnetic radiation and there is zero clarity as to what entity will bear legal responsibility for damage to life, limb and property arising from exposure to 5G, whether ground - or space-based.

The City's web page does not have any information about this new technology, and the public received almost no information as it is not possible yet to be notified about this topic. The local media does not seem to be aware of these big changes.

The aware public is asking for wired technology through fiber optic cables. The wireless industry is moving at lightening speed to get 5G rolled out. We need to protect our children, our environment and ourselves from this radiation. Individual progressive cities have come forward and crafted very stringent regulations, some even sued the FCC. San Jose is the lead plaintiff in one of the new cases, joined by the city and county of Los Angeles; Las Vegas; Portland, Oregon; and 16 other cities in California, Washington and Arizona. Other suits were brought by Seattle, joined by surrounding King County and neighboring Tacoma, Washington, and Huntington Beach, California. One example:

<http://emfrefugee.blogspot.com/2019/06/5g-crisis-historic-class-action-lawsuit.html>

For ongoing lawsuits against the US Federal Communications

Commission (FCC) over the constitutional overreach in the rollout of 5G see

<https://www.globalresearch.ca/telcos-losing-battle-impose-5g/5691065>

THE 5G ROLL-OUT HAS NOT EVEN BEEN APPROVED BY THE AMERICAN PEOPLE; NOR HAS IT BEEN PROPERLY EVALUATED BY GOVERNMENT OR STUDIED BY QUALIFIED SCIENTISTS WITHIN THE INTERNET OF THINGS (IT), WIFI AND TELECOMMUNICATIONS INDUSTRIES!

Thank you for your interest and support.

Annemarie Weibel

10-15-19

Links to Data Presented & Additional Resources

List of Studies

- **US Navy Report** (1971) – Naval Medical Research Institute – [*Bibliography of Reported Biological Phenomena \('Effects'\) and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation*](#)
- **Blood Brain Barrier** – The first study was conducted by Dr. Allan Frey (1975) (who already proved the "[Auditory Effect](#)" / "[Frey Effect](#)" of non-thermal Microwave Radiation) – *The study found that (1) non-thermal levels of microwave radiation can break the blood brain barrier (BBB) (2) the main cause of the adverse effects are from the modulation rather than the carrier wave - [Neural function and behavior: defining the relationship](#). The Swedish Neuro-Scientist, Dr. Lai Salford confirmed Frey's study regarding the BBB. He conducted further studies on the various effects of this radiation on the brain. [Summary by Arthur Firstenberg from Cellular Phone Task Force about Salford's work and link to his studies](#).*
- **Bioinitiative Report** (2012) - *The Bioinitiative report is the most comprehensive review of studies on biological effects caused by EMFs. It was prepared by 30 world-leading scientists and public health professionals. The authors reviewed 3000 peer reviewed studies on EMF's, including about 1,800 on the effects of wireless radiation. Their conclusion: "Bio-effects can also occur from just minutes of exposure to mobile phone masts (cell towers), Wi-Fi, and wireless utility 'smart' meters that produce whole-body exposure". – [Color Charts of Sample Studies of Reported Biological Effects from Radiofrequency Radiation at Low-Intensity Exposures](#).*
- **Oxidative Stress Mechanism** – Meta Analysis Paper - Yakymenko (2015) – *This analysis shows that 93 out of 100 studies show wireless radiation causes oxidative stress, a mechanism that can lead to cancer, non-cancer diseases, and DNA damage. This study disproves the wireless industry's misleading statements that there are no mechanisms by which non-thermal levels of wireless radiation can affect the body. It also disproves the industry contentions that "the overwhelming majority of studies show no effects". [Oxidative Mechanisms of Biological Activity of Low-Intensity Radiofrequency Radiation](#)*
- **Increase in Glucose Metabolism** - National Institute of Health (NIH) Study - Volkow (2011) - *This study shows conclusive evidence of the bio-effects of wireless radiation on the human brain. [Effects of Cell Phone Radiofrequency Signal Exposure on Brain Glucose Metabolism](#)*
- **NTP Study** – On Nov. 1 2018, the final report of the results of the \$30 million 14-year study of the National Toxicology Program (NTP) of the National Institute of Environmental Health Sciences (NIEHS) was published and determined the study showed CLEAR EVIDENCE that cell

phones cause cancer and breaks the DNA. This is the biggest study of its kind. **A peer review panel of 11 scientists confirmed the findings of "clear evidence" on March 28, 2018. [Read about the study on SaferEMR.com Website: National Toxicology Program Finds Cell Phone Radiation Causes Cancer.](#)** We now have the government study that proves beyond a doubt the harm of wireless technology and it should be a game changer. The public must be warned and protected. **Dr. Ron Melnik**, PhD, Senior Toxicologist and Director of Special Programs in the (NIEHS), who lead the study until he retired, said in 2016: **"The NTP tested the hypothesis that cell phone radiation could not cause health effects and that hypothesis has now been disproved. The experiment has been done and, after extensive reviews, the consensus is that there was a carcinogenic effect"**. In regard to the DNA damage findings, Dr. Melnik stated that the results of the study: **"should put to rest the old argument that RF radiation cannot cause DNA damage"**.

- **The Ramazzini Study** – The [Ramazzini study](#) is a 6 million Euro study conducted by the Ramazzini Institute in Italy. The study is similar to the NTP study with one major difference – while the NTP study used levels of radiation similar to those emitted from a cell phone, the Ramazzini used levels of radiation 6,000 times lower, which are more like the levels of radiation we get from further away cell towers. The results were the same as the results of the NTP.
- **Microwave Sickness** – Belyaev et al (2016) - [EUROPAEM EMF Guideline 2016 For the Prevention, Diagnosis and Treatment of EMF-Related Health Problems and Illnesses.](#) Microwave Sickness is the more accurate name for electro-sensitivity (ES). It is the most widespread manifestation of illness from wireless radiation with mainly neurological symptoms. At least 10% of the population has already developed the condition; the rates are likely much higher. In 2016, the EMF working group of the European Academy for Environmental Medicine (EUROPAEM) published guidelines, which include a review of the science of Electro-Sensitivity and instructions for doctors on how to diagnose and treat ES. It is important to know that Microwave Sickness is Recognized under the ICD-10 as 'Radiation Sickness' and was acknowledged by various government agencies as a disability.
- **Cancer in Children**- American Brain Tumor Association - Ostrom (2015) – This report shows that the 4 leading diseases that kill children and young adults are brain tumors, thyroid cancer, testis cancer and rectal cancer – cancer in proximity to where wireless devices are carried/used. [Adolescent and Young Adult Primary Brain and Central Nervous System Tumors Diagnosed in the United States in 2008-2012.](#) Read about the school in Ripon CA in which 6 children and 3 teachers developed cancer after a "small cell" antenna was installed in the school.
- **Cancer from Cell Towers** – Meta Analysis Paper- Yakymenko et al (2011) – a good summary of studies including army and air-force studies that show wireless radiation from cell towers and radars have severe adverse effects. This is a good study to explain to legislators why we should not allow 5G towers near our homes or children's schools. [Long-Term Exposure to Microwave Radiation Provokes Cancer Growth: Evidences From Radars and Mobile Communication Systems](#)

- **Courts Find Causation Between Cell Phones & Brain Tumors** - [Fifth Court in Italy Ruled Cell Phones Cause Brain Tumors and Determined It Is An Occupational Disease](#)
- **Reduced Sperm Count** - Zilberlicht (2015) - *Dozens of studies prove beyond a doubt that wireless radiation adversely affects the sperm.* - [Habits of cell phone usage and sperm quality - does this warrant attention?](#)
- **Autism** – Prof. Martha Herbert MD. PhD is a pediatric Neurologist from Harvard University who specializes in autism. After exploring the potential correlation between the exponential increase in the rates of children with autism to the exponential increase in our exposure to electromagnetic fields and radiation from wireless, she concludes that there is a likely correlation - [Autism and EMF? Plausibility of a pathophysiological link – Part I; Part 2](#). She is now convinced that there are established non-thermal effects from wireless radiation and is a strong **advocate against WiFi in schools**. [Press Here for her letter on this issue](#).
- **ADD** – Prof. Hugh Taylor (2012) Yale University – *The study showed that when pregnant mice were exposed to microwave radiation, it caused changes in the brains of their babies and behavior that resembled ADHD.* [Fetal Radiofrequency Radiation Exposure From 800-1900 Mhz-Rated Cellular Telephones Affects Neurodevelopment and Behavior in Mice](#). Press [HERE](#) for Prof. Taylor video presentation.
- **Wi-Fi** - New meta-analysis paper by Prof. Martin Pall (2018) – *The paper summarizes the various health effects found to be caused by WiFi.* [Wi-Fi is an important threat to human health](#)

The Wireless Fraud

- **The Nation Article** – excellent article that was published on 3/29/18, about the wireless industry fraud/cover up titled: "[How Big Wireless Made Us Think That Cell Phones Are Safe: A Special Investigation](#)" and the subtitle: [The disinformation campaign—and massive radiation increase - behind the 5G rollout.](#)" The article is especially important as it was written by two leading investigative journalists - **Mark Hertzgaard** and **Mark Dowie**. Dowie is a former publisher and editor of Mother Jones and has won nineteen journalism awards.
- **FCC – Captured Agency** - Harvard University Center for Ethics (2015)- [Captured Agency: How the FCC is Dominated by the Industries It Presumably Regulates](#). Summary of relevant points from the report regarding the FCC & the wireless industry from SaferEMR.com - [An Exposé of the FCC: An Agency Captured by the Industries it Regulates](#)

Impact on the Environment

- Bees Birds and Mankind - A very interesting report from a leading German scientist about the effects of wireless radiation on bees, birds and humans. Ulrich Warnke (2009) – [Bees, Birds and Mankind - Destroying Nature by 'Electrosmog'](#)

5G

- **A good introductory article about 5G health effects** - Dr. Cindy Russell (2017) - [A 5G Wireless Future – Will It Give Us a Smart Nation or Contribute to an Unhealthy One?](#)
- [5G Appeal](#) - Appeal of 240 scientists from 31 countries who published over 2,000 studies on EMF effects calling for a moratorium on 5G because the harms are proven and because an epidemic of sickness already exists. Ignoring it is a price society can no longer pay.
- **Impact of 5G on Energy Consumption** - [5G use will increase energy costs: study](#)
- **5G in Congress** - Senator Blumenthal's Actions to Expose the Lie About the FCC claim that 5G is safe - [Finally, Health Effects Were Mentioned in 5G Senate Commerce Committee Hearing](#)
- See below list of websites with information about 5G.

Database of Studies

- **Database of Studies** – A website which is managed by a German hospital and funded by the German government and industry. Likely the most comprehensive database of studies on the issue of electromagnetic fields and radiation (both studies that found effects and studies that didn't find effects), a total of about 30,000 studies- [EMF-Portal](#)

California Specific Information

- **California Medical Association (CMA) Resolution on Wireless Standards Reevaluation** (2014) Resolution 107- 14 - The California Medical Association passed a [resolution stating that our current safety standards are not adequate to protect public health](#) and need to be revised to take into account non-thermal biological effect. Its resolve states: "CMA support efforts to implement new safety exposure limits for wireless devices to levels that do not cause human or environmental harm based on scientific research." In this resolution CMA acknowledges that "*... peer reviewed research has demonstrated adverse biological effects of wireless EMF including single and double stranded DNA breaks, creation of reactive oxygen species, immune dysfunction, cognitive processing effects, stress protein synthesis in the brain, altered brain development, sleep and memory disturbances, ADHD, abnormal*

behavior, sperm dysfunction, and brain tumors..." CA Medical Association is the only medical association that passed such a resolution.

- **LA Firefighters & Cell Towers** - in 2005, The International Firefighters Union, representing over 300,000 firefighters recognized wireless microwave radiation health effects and has stood strongly against locating cell towers on top of their fire stations; [28 page International Association of Fire Fighters Resolution](#) detailing health effects associated with exposure to wireless microwave radiation and reported symptoms of their exposed firefighters. The document states numerous health effects were found to be caused by wireless radiation. The resolution was a result of complaints by firefighters of headaches, memory problems, sleeping problems, anxiety following the installation of cell towers at their fire stations. Brain scans of the firefighters in 2005 showed abnormalities. The results of these abnormal brain scans were summarized in a [letter written to the FCC in 2013](#). California Assembly Bill AB57, which passed on October 9, 2015, exempts fire stations from having transmitting devices on their facilities. The 5G Bill SB 649 which was vetoed by Governor Brown included an exemption for firefighters.
- **Medical Studies From CA: Divan (2010) – "Cell Phone Use and Behavioral Problems in Young Children"** - Two of the top universities in California, UCLA along with USC, completed an National Institute of Health (NIH) funded study showing that pregnant women using cell phones had children with more behavioral problems. This was a repeat of a study previously done in Europe, showing its validity. Another recently published study was done on 83,000 women showing the same results.
- **CA Department of Public Health (CDPH) Cell Phone Safety Guidelines (2017)** - In December 2017, the California Department of Public Health became the first US State Department of Health to publish guidelines on [how to reduce exposure to radiofrequency from cell phones cell phones](#). However, sadly the story behind the publication of the guidelines exposes the outrageous failure of those entrusted to protect our health, likely because of fear of industry. In 2014 Dr. Joel Moskowitz, Director of the Center for Family and Community Health, School of Public Health, University of California, Berkeley, submitted 3 requests to the CDPH under the California Public Records Act for this information. All three requests were denied. In 2016, the UC Berkeley School of Law, Environmental Law Clinic and the First Amendment Project filed a lawsuit on his behalf in the Sacramento Superior Court. On May 12, 2017, CA Attorney General's office released the drafts. Shockingly it was discovered that since 2009 and until 2015, the California Department of Public Health prepared 27 versions of a cell phone radiation safety fact sheet but never released them to the public. In December 2017 it officially published the guidelines. Needless to say the guidelines are inadequate, full of fear of telling the truth and also give bad advice such as encouraging the use of bluetooth headphone. The story was covered by the San Francisco Chronicles "[New records show how state reworked secret cell phone warnings](#)"

Technical Information

- [Purchasing a Meter to Measure Wireless Radiation](#) - There are various meters on the market. Each has advantages and disadvantages. My personal favorite is Cornet ED88T Plus. I like it because it is small and easy to carry everywhere. It also has the most features - lights, sound, graph, it shows the frequency and measures not only the radiation from wireless devices but also the electric and magnetic fields of the house electricity (low frequencies). It is the best value for the money and quite accurate. Other popular meters are the Acoustimeter and the Trifield. PLEASE do not buy the meter on Amazon but rather from activists who have also a side business of selling such products to help support their efforts. For example - you can buy from Josh Hart at [StopSmartMeters.Org](#). Josh has led the movement against smart meters and he is also in California. If you mention my name he will give you a discount. Another website of an activist who is doing a great job is [4EHSbyEHS.com](#). There are many others.
- [Building Biologists](#) - if you are considering shielding your house and/or make sure it is optimal in terms of EMFs and radiation, you can hire a building biologist to help you. [Press HERE for a list of Building Biologists](#).

Recommended Articles

The *Epoch Times* is the paper with the highest distribution in the world and is being published in 26 languages. It is a NYC based newspaper. The paper has been publishing many articles about the topic. The articles are very well researched.

- **Article About NTP** - [Study Finds 'Clear Evidence' Linking Cellphone Radiation to Tumors in Rats](#)
- **Article About 5G** - [Resistance to 5G: Roadblock to a High Tech Future or Warning of a Serious Health Risk?](#)
- **Article About Wi-Fi in Schools** - [Wi-Fi in Schools: Experimenting With The Next Generation](#)
- **Article About Microwave Sickness** - [Tuning in to Microwave Sickness - How wireless technology can trigger a devastating illness](#)

Suggested Movies

- [Generation Zapped](#) – An introductory movie to the issue of wireless health effects.
- [Microwaves, Science & Lies](#) – A movie about the wireless fraud including in the World Health Organization.
- [Resonance – Beings of Frequency](#) (free) – A movie about how wireless is affecting us, considering humans are electric beings.
- [Take Back Your Power](#) – A movie mainly about wireless "smart" meter fraud and harms.

Books

- [Invisible Rainbow – A History of Electricity and Life](#) – By Arthur Firstenberg
- [Disconnect – The Truth About Cell Phone Radiation, What the Industry Has Done to Hide it and How to Protect Your Family](#) – By Dr. Devra Davis
- [Overpowered](#) - By Dr. Martin Blank

Contacts / Organizations in CA

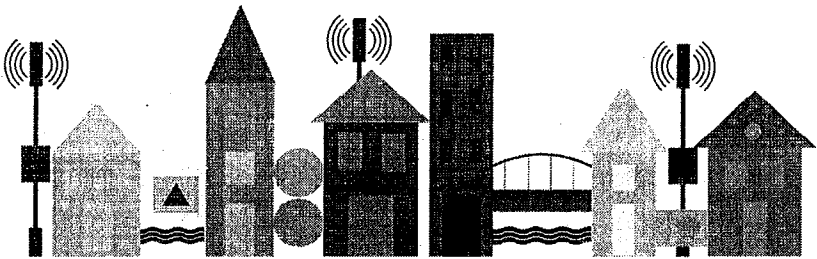
- **Center for Electrosmog Prevention** – Led by Sue Brinchman who is doing fantastic job and focuses on the San Diego area. Email: director@electrosmogprevention.org
- **EMF Safety Network** – Led by Sandi Mauer from Marin County. Email: director@electrosmogprevention.org

Websites

- [We Are The Evidence](#) – Advocacy group that represent the many adults and children who have become sick by wireless technology radiation. We are not an organization that focuses on maintaining an information heavy website as we are more focused on the actual, on the ground work educating elected officials, getting accommodation for the injured, being involved in legal actions, and helping communities.
- [Safer EMR](#) - Scientific and policy developments regarding the health effects of electromagnetic radiation exposure by Joel M. Moskowitz, Ph.D., Director, Center for Family and Community Health, School of Public Health, University of California, Berkeley
- [Americans for Responsible Technology](#) - A Coalition of organizations, including We Are The Evidence, that is lead by seasoned environmental advocates Patti & Doug Wood. They are now leading the on-the-ground movement. They provide great resources for activists and organized the [5G Crisis](#) Day of Action that took place on May 15. They are doing a fantastic job!
- [WhatIs5G.info](#) – Covers the various issues associated with 5G including health, environmental issues, privacy, cyber security, e-waste, and more.
- [StopSmartMeters.Org](#)
- [Scientists for Wired Technology](#) & [My Street My Choice](#) - Focuses on how to stop 5G transmitters in front of our homes - by Paul McGavin from Marin County, CA.
- [Environmental Health Trust](#) – Organization and led by Dr. Devra Davis, focuses on providing online information on various aspects of wireless harms.
- [Microwave News](#) – For over 35 years Microwave News has been the leader reporting on the potential health and environmental impacts of electromagnetic fields and radiation.

Wireless Radiation

*An Undeniable Risk
to Human Health*



An annotated history of the science compiled by
Grassroots Environmental Education,
a science-based non-profit organization.

Introduction

There are two important conversations regarding wireless technology going on today. The first, amplified by telecom companies, their investors and the media, promises a fantastic new future with breakthroughs in communications, medicine, education, transportation and entertainment...all delivered instantly by a seamless, wireless infrastructure surrounding us everywhere we go. The second, engaging medical professionals, public health experts and scientific researchers, concerns a looming public health crisis based on the known biological risks from both short and long-term exposure to radiofrequency (RF) microwave radiation, or "wireless radiation," the foundation of that wireless infrastructure.¹

The race between science and commerce is on, with extremely high stakes for everyone on the planet. Will powerful new wireless networks and devices become even more ingrained in the everyday lives of consumers before scientists and public health officials are able to make their voices heard? Will there be enough time to alert the public to the undeniable risk, and compel government to take steps to protect public health?

We've been here before, of course. At one point in time, DDT, asbestos and tobacco were all considered beneficial. Only later, as the research matured and the human suffering became obvious, did we understand the danger of ignoring emerging science and early signs of trouble. Will we make the same mistake again with wireless radiation?

We offer this booklet of scientific information based on independent, peer-reviewed studies so that decision makers at all levels of government can be fully informed about wireless radiation and its impact on human health.

On February 8, 1996, President Bill Clinton signed the 1996 Telecommunications Act into law, ushering in an era of unparalleled innovation and marketing of wireless communications that has fundamentally changed the way people interact with the world around them. It was a landmark event, hailed by the telecom industry as a great step forward into the future.

Few people outside of the industry knew that Dr. Henry Lai and Narendra Singh at the University of Washington in Seattle had just published a study documenting a breakthrough discovery - single strand DNA breaks resulting from exposure to wireless radiation, the energy produced by virtually all wireless communications devices.² DNA strand breaks can impair cell function, change cell structure and even lead to cell death. It's how we age, and how we develop cancer.

“...biological damage from exposure to wireless radiation was something that electrical engineers and telecom companies had steadfastly claimed was impossible.”

The finding was especially remarkable because biological damage from exposure to wireless radiation was something that electrical engineers and telecom companies had steadfastly claimed was impossible. Exposure could heat tissue if you got too close to an antenna, the engineers and physicists told legislators and regulators, but non-ionizing radiation was too weak to damage any biological systems.

Lai and Singh couldn't explain exactly how or why the DNA strands were damaged. *Was it a direct effect of the radiation? Or did the radiation interfere with the body's normal DNA repair mechanisms?* More research was needed.

We are all electric

Unless we happen to have a pacemaker, few of us appreciate the role that electricity plays in our bodies. Human beings evolved over millions of years in a natural electrical environment. The earth itself is a giant dipole magnet with poles north and south. There are constant oscillations emanating from the earth's core, and a natural static magnetic field that shifts slightly with the seasons. These magnetic fields play an important role in nature, dictating migration patterns and controlling our own circadian rhythms, among many other things.³

Like all animals on earth, our biological systems use an interplay of tiny electrical charges and chemical signals to control and direct precise responses to internal and external stimuli, thus influencing function and development. External influences, both chemical and electrical, can interfere with and adversely affect these biological processes. External influences include both natural and man-made electromagnetic fields (EMFs).

While most public health experts and scientists understand how environmental factors influence our cell biology, the idea that we can acquire a chronic illness from non-ionizing RF microwave radiation, even at low levels, has not yet taken hold in the medical community. Everyone now knows the hazards of exposure to cigarette smoke and lead, but how soon will we recognize the adverse health effects of the increasing and involuntary exposure to wireless radiation?

Dr. Robert O. Becker, surgeon and researcher who was twice nominated for the Nobel Prize, once observed, “I have no doubt in my mind that, at the present time, the greatest polluting element in the earth's environment is the proliferation of electromagnetic fields.”⁴

Early studies on wireless radiation and biological effects

The work of Lai and Singh at the University of Washington was not the first study to suggest biological effects from wireless radiation. Studies conducted by the U.S. military between 1940 and 1960, primarily concerned with personnel exposure to radar, had documented biological effects and impacts on behavior from exposure to wireless radiation.⁵ In 1973 the EPA hosted a meeting in collaboration with the American Public Health Association to discuss the growing concern over non-ionizing radiation and its potential impact on human health.

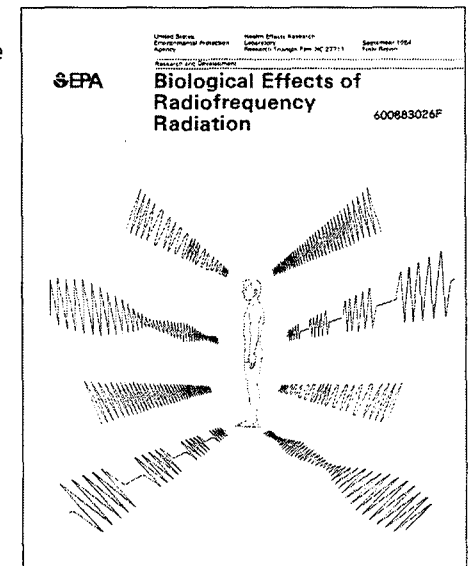
In the same year, at an international symposium on the "Biologic Effects and Health Hazards of Microwave Radiation" held in Warsaw, Poland, it was stated that "The reaction of the central nervous system to microwaves may serve as an early indicator of disturbances in regulatory functions of many systems."⁶

In 1977 the *Journal of Microwave Power* published an article citing new research demonstrating that exposure could affect nervous system function at power levels far below those that could heat tissue.⁷ The following year, scientists at the

The electromagnetic spectrum is roughly divided into ionizing and non-ionizing radiation. It is well established that ionizing radiation can cause direct harm by removing electrons from atoms with resultant DNA damage resulting in fixed mutations.⁸ It also produces "free radical" molecules (those with an imbalance of electrons) which can cause widespread injury to cell structures via oxidation of tissues and cell death. Non-ionizing radiation acts as an environmental stressor, with direct, toxic oxidative effects on biological processes unrelated to heat or to ionization.⁹ The effect of non-ionizing radiation is indirect, inducing biochemical changes in cellular structures and their membranes.¹⁰

National Institute for Occupational Safety announced that exposure to wireless radiation had a biological effect on animals and humans, including damage to major organs, disruption of important biological processes, and the potential risk of cancer.¹¹

In 1982 the Environmental Protection Agency's Office of Radiation Programs, which had been studying the non-thermal effects of wireless radiation for a decade, announced that it was developing a federal guidance to limit the public's exposure. Before the Agency was able to develop and implement those guidelines, its authority to do so was rescinded and the office was defunded.



EPA publication on RFR before being defunded

Research continued through the 1980s, much of it focusing on the further effects of thermal heating, particularly an increase in temperature in the tissue, which typically triggers physiological and behavioral thermal regulatory responses. These responses involve neural activities both in the central and peripheral nervous systems.¹² Other researchers looked at disturbances in neuroendocrine functions triggered by exposure to wireless radiation, which are related to stress, alteration in immunological responses, and tumor development.¹³

The industry responds

By 1996, concern about the public's reaction to the growing scientific evidence of potential harm led the telecom industry to craft and lobby for language in the Telecommunications Act that would pre-empt any local interference with the placement of wireless antennas in local communities on the basis of "environmental" factors, a phrase which the telecoms have argued in court, means anything to do with human health.¹⁴

Later that same year, the recommendations of the International Electrical and Electronics Engineers (IEEE) and a 1986 report from the National Council on Radiation Protection and Measurements (NCRP) regarding the limits to which humans could safely be exposed to wireless radiation were championed by the telecom industry. They were incorporated into the guidelines adopted by the Federal Communications Commission (FCC), where they remain today.¹⁵ The guidelines are based solely on the thermal capacity of wireless radiation, and use the Specific Absorption Rate (SAR) as the means to measure exposure.¹⁶

Relevant factors which are not considered in the FCC's public exposure guidelines include:

- simultaneous exposure to multiple microwave frequencies
- genetic variability/susceptibility
- age and individual health status
- synergistic impact of combined toxic exposures
- unique dosimetric properties of tissues/organs in the body
- unique vulnerability of children due to their developing physiology
- critical windows of development in children
- long-term cumulative exposure impacts

Late 1990s and 2000s: Scientific inquiry continues

Scientific inquiry, meanwhile, continued its slow but methodical pace. Independent researchers around the world sought to understand the impact of this increased exposure on human health.

In 1997, Henry Lai and Narendra Singh published another study, this one showing both single and double-strand DNA breaks with low intensity RF microwave radiation.¹⁷ The following year they repeated the studies, but this time added a group of rats that were given melatonin, a potent free radical scavenger, before and after RF exposure. They found that melatonin seemed to block the adverse effects of the radiation.¹⁸

In 1998, Dr. Jerry Phillips at the Pettis VA Medical Center in Loma Linda confirmed DNA single-strand breaks exposed to RF microwave frequencies 813.5 MHz and 836.5 MHz frequencies at a low SAR (average 2.4 and 24 $\mu\text{W/g-1}$).¹⁹

In 2004, the Reflex Project, which included 12 research teams in seven European countries, confirmed the ability of low level RF microwave radiation to cause DNA breaks in exposed cells (SAR=0.3 and 2W/kg), as well as its ability to activate a stress response - the production of heat shock proteins. This stress response is a well-documented protective reaction of plant and animal cells to a variety of environmental threats, including high frequency RF radiation.²⁰

Dr. Martin Blank and Reba Goodman at Columbia University demonstrated that the stress response was triggered at different RF frequency ranges with different SARs, rendering the SAR measurement questionable as a basis for the development of FCC safety guidelines. This work was confirmed by Dr. Dariusz Leszczynski and his team of researchers at the University of Helsinki in 2004.²¹

In 2007, researchers at the University of Kentucky were able to demonstrate how exposure to RF microwave radiation can damage or even destroy brain cells,²² and in 2012, a study conducted at Yale University found that pregnant laboratory mice exposed to RF microwave radiation produced offspring that were more hyperactive and had poorer memory compared to the unexposed control group. Dr. Hugh Taylor, Chair of the Department of Obstetrics, Gynecology and Reproductive Sciences at Yale University School of Medicine, examined the brain structure of the exposed animals and discovered significant neuron damage in the prefrontal cortex - the part of the brain that controls behavior – with no such damage in the control group.²³

Other researchers published similar studies on wireless radiation's impact on brain development, showing that laboratory animals prenatally exposed to the radiation developed impaired learning and also showed damage to those parts of the brain involved in memory and learning.²⁴ Prenatally exposed rat pups also had damaged spinal cords.²⁵

The World Health Organization (WHO)/International Agency for Research on Cancer classified RF-EMF (radiofrequency electromagnetic fields) as a Class 2B (Possible Human Carcinogen) in 2011 based on credible evidence that linked long term wireless exposure to brain cancer.²⁶

More recently, a ten-year, \$30-million-dollar study conducted by the National Toxicology Program of the U.S. National Institutes of Health sought to determine if exposure to wireless radiation from cell phones increased the risk of cancer. The conclusion by a 13-member independent panel of experts in 2018 was that there was “clear evidence” of an increased cancer risk, the highest level of scientific certainty.²⁷ Dr. Ronald Melnick, principal designer of the study, stated, “We should no longer assume that any current or future wireless technology – including 5G – is safe without adequate testing.”²⁸

“We should no longer assume that any current or future wireless technology – including 5G – is safe without adequate testing.”

A 2018 study by the Ramazzini Institute in Italy, funded in part by the U.S. government, found that lab animals exposed to wireless radiation from distant cell towers had a greater chance of developing heart tumors than those which were not exposed. This study was the first large-scale study to show clear evidence of cancer risk from far-field exposures.²⁹

Other recent studies demonstrate that wireless radiation has broad effects on the body, impacting sperm, ovaries, liver, kidneys, the immune system, melatonin production, the blood brain barrier, and nerve cell viability and function.³⁰ Prenatal developmental effects are especially worrisome as they can be heritable. The damage to cells is cumulative and increases with longer exposure. Because of long latency periods between exposure and diseases such as brain cancer, the full negative effects of wireless radiation exposure on public health may not be realized for many years.³¹

Bio-chemical mechanisms of harm from wireless radiation

Oxidative damage, altered intra-cellular signaling, membrane effects, direct effects on proteins, and free radical production have all been identified as biological effects of exposure to RF microwave radiation.³² These effects are similar in many ways to biological effects of exposure to pesticides, industrial chemicals and heavy metals.³³

Disruptions of normal cellular function can be caused by the overproduction of unstable molecules called reactive oxygen species ("ROS").³⁴ These molecules react easily with other molecules in a cell, and can lead to DNA damage, proliferation and cell death.³⁵ This is known to contribute to the development of cancer as well as neurologic, metabolic and reproductive harm.³⁶ Measurements of ROS in different tissues are now used in biomedical research as a biomarker for inflammation, toxic exposure and disease.³⁷

All cells in living organisms have an electrical voltage across their membrane, generated by unequal distributions of ions. An active transport system keeps the cell membrane in electrochemical balance, but miniscule electromagnetic fields can alter this balance, and thus, biological processes.³⁸ Studies suggest that exposure to RF microwave radiation may trigger the alteration of this delicate balance.³⁹

Calcium has been called the "ultimate signaling molecule for organisms ... [and]...mediates processes as diverse as synaptic transmission, muscle contraction, insulin secretion, fertilization, and gene expression."⁴⁰ Alterations of cellular calcium channels could have significant effects on diverse physiological and developmental events without breaking any chemical bonds.⁴¹ Hundreds of studies show microwave radiation changes calcium fluxes and intercellular calcium signaling.⁴²

Acute effects: electro-sensitivity as a clinical diagnosis

Over time, the proliferation of wireless devices and computers has not only revealed a number of significant health impacts, but also an increasingly common and relatively new syndrome called electro-sensitivity or microwave sickness. A growing number of people in all walks of life are reporting a range of symptoms, including headaches, insomnia, mental confusion, heart palpitations and fatigue in the presence of wireless devices and when in close proximity to cell towers. These are classic signs of microwave sickness described in reports by NASA,⁴³ the U.S. Department of Defense⁴⁴ and the EPA.⁴⁵

The United States Access Board recognizes "that multiple chemical sensitivities and electromagnetic sensitivities may be considered disabilities under the Americans with Disabilities Act (ADA) if they so severely impair the neurological, respiratory or other functions of an individual that it substantially limits one or more of the individual's major life activities."⁴⁶

Over a decade ago, firefighters in California reported the development of symptoms of electro-sensitivity after wireless transmitters were installed on fire stations. They noted severe headaches, sleep deprivation, depression, lack of focus, lack of impulse control, slowed reaction time, tremors and vertigo. The International Association of Firefighters (IAF) commissioned a study to further investigate the issue. The study confirmed adverse effects on the firefighters, and the IAF authored a policy statement asking for exemptions from placement of wireless antennas on their facilities so they could maintain "optimal cognitive and physical capacity at all times."⁴⁷

Research is advancing with evidence that electro-sensitivity may be related to multiple chemical sensitivity (MCS) as a toxic exposure. Common pathological mechanisms are suggested as illness appears related to oxidative and inflammatory processes. Biomarkers for electro-sensitivity have been proposed to help better diagnose the condition.⁴⁸

Biological harm to living organisms

Science is revealing harm to all living organisms, including trees,⁴⁹ plants, animals, insects and bacteria, from radiofrequency EMR exposure with levels at or below current U.S. safety guidelines.⁵⁰

In 2013, a group from the Institute of Environmental Sciences in the Netherlands published a thorough review of the ecological effects of RF-EMF, based on 113 published, peer-reviewed studies. They found that wireless radiation had a significant effect on birds, insects, other vertebrates, and multiple organisms and plants in 70% of the studies.⁵¹

Bees are a critical pollinator species, required for the adequate fertilization of flowers, ensuring that a new generation of seeds and fruit will be produced. Emerging research indicates that the recent decline in wildlife and bee populations may be associated with higher levels of ambient electromagnetic radiation (EMR).⁵² Birds and bees use an iron ore mineral called magnetite in their brains for navigation and distant migration. Electromagnetic microwave radiation has been shown to disrupt this process.⁵³ Research has demonstrated abnormalities in reproduction and behavior of birds nesting near cell towers.⁵⁴

Industry pushback

Not surprisingly, the wireless industry has pushed back hard against the ever-growing body of independent, peer-reviewed research, commissioning their own studies and questioning the findings and competence of independent scientists. Like the tobacco industry before it, the wireless industry has sought to create sufficient doubt and “scientific controversy” to dissuade federal regulators from reigning in the broad expansion of wireless networks.

Researchers like Henry Lai became concerned about the manipulation of science for profit, and in 2006 he performed an analysis of the available studies on RF microwave radiation between 1990 and 2006, including the source of funding for the studies. He found that 50% of the 326 studies showed a biological effect from exposure to RF microwave radiation and 50% showed no effect. But when he separated the studies based on funding, he found that only 30% of the industry-funded studies showed an effect, while 70% of the independently funded studies showed an effect.⁵⁵

In 2012, the U.S. Government Accountability Office issued a report recommending that the FCC update its human exposure guidelines for RF microwave radiation. The following year, the agency commenced an official review of its exposure policies. Thousands of comments were submitted, including hundreds from independent experts from around the world. The agency closed the inquiry in late 2013, taking the comments under advisement. No changes were ever made to the guidelines, and no acknowledgement of the review was announced.

Recently, members of Congress have demanded to know the results of the inquiry, and why the guidelines haven't been changed. FCC Chairman Ajit Pai has responded with a recommendation that the FCC formally adopt a policy to maintain its current exposure standards, which, for cell towers, antennas and other wireless infrastructure, are among the least protective in the world.

Conclusion

The notion that exposure to radiofrequency microwave radiation is not harmful to humans, which has been the underlying principle of all federal legislation and regulations regarding wireless technologies for more than twenty years, has now been proven false.

The substantial body of credible science documenting harm from exposure to various levels and frequencies of wireless radiation mandate a precautionary approach to the widespread deployment of wireless technologies to reduce potential harm to the public and the environment.⁵⁶

While some studies on wireless radiation exposure found no effects, hundreds of studies *did* find biological effects occurring at levels at or below current U.S. standards. This has prompted more than 240 scientists with published peer-reviewed research on wireless radiation and health to sign an appeal to the World Health Organization and the United Nations, calling for precautionary health warnings and stronger regulation of wireless radiation.⁵⁷

As the wireless industry ramps up its hype for the next generation of wireless communication, hundreds of thousands of new cellular antennas will be deployed on the ground and in the air, resulting in an increase in the complexity of EMR frequencies, pulsations and density which have not been shown safe for humans. Respected researchers have given us a much better foundation from which we can extrapolate that this increased EMR exposure **is** an undeniable risk to our health and the environment.⁵⁸

The Precautionary Principle states, "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically."⁵⁹

More information

BioInitiative Working Group, Cindy Sage and David O. Carpenter, Editors. BioInitiative Report: A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Radiation.
www.bioinitiative.org.

Peer Reviewed Scientific Research On Wireless Radiation, The Environmental Health Trust,
<https://ehtrust.org/science/research-on-wireless-health-effects/>

Digest of Independent Science on Wireless Radiation and Human Health, Grassroots Environmental Education,
<http://grassrootsinfo.org/emergingscience.php>.

* * *

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References

- ¹ The wireless industry has begun to refer to this type of radiation as "RF energy"
- ² Lai and Singh, "Single-and Double-strand DNA breaks in rat brain cells after acute exposure to radiofrequency electromagnetic radiation." *The International Journal of Radiation Biology* (1996; 69:4:513-521) and *Bioelectromagnetics* (1996; 16:207-210) (1995/1996).
- ³ B. Blake Levitt, editor, "Cell Towers - Wireless Convenience, or Environmental Hazard?" Proceedings of the Cell Towers Forum, State of the Science / State of the Law, New Century Publishing (2000).
- ⁴ Becker, R. O., & Selden, G., "The Body Electric: Electromagnetism and the Foundation of Life." William Morrow & Company. Inc., New York. (1985).
- ⁵ Cook et al, "Early Research on the biological effects of microwave radiation," 1940-1960, *Annals of Science* 37, p.323-351 (1980).
- ⁶ Czerski, P. "Experimental models for the evaluation of microwave biological effects." *Proceedings of the IEEE*, Volume 63 Issue 11 (1975).
- ⁷ Stuchly, M. "Potentially hazardous microwave radiation—a review." *Journal of Microwave Power Dec*; 12(4):369-81 (1977).
- ⁸ Martin Pall, J., "Electromagnetic fields act via activation of voltage-gated calcium channels to produce beneficial or adverse effects." *Cell. Mol. Med.* Vol 17, No 8, pp. 958-965. (2013).
- ⁹ Kim M, Bae M, Na H, Yang M, "Environmental toxicants—induced epigenetic alterations and their reversers." *Journal of Environ Sci Health C Environ Carcinog Ecotoxicol Rev.* 2012;30(4):323-67. (2012).
- ¹⁰ Desouky, et al, "Targeted and non-targeted effects of ionizing radiation," *Journal of Radiation Research and Applied Sciences*, Vol. 8 No. 2 Pages 247-254 (2015).
- ¹¹ M. J. Dwyer and D. B. Leeper, "Carcinogenic Properties of Non-Ionizing Radiation; Volume H - Microwave and Radiofrequency Radiation", *National Institute for Occupational Safety Technical Report*, published by The U. S. Department of Health, Education & Welfare, NIOSH Contract Number 210-76-0145, Cincinnati, (1978).
- ¹² Adair, E.R. "Thermoregulatory consequences of long-term microwave exposure at controlled ambient temperatures," *Bioelectromagnetics*, 1984; Stern, S. "Behavioral effects of microwaves." *Neurobehavioral Toxicology.*, 2, 49. (1980).
- ¹³ Michaelson S.M., Lin J.C. Neuroendocrine Effects. In: *Biological Effects and Health Implications of Radiofrequency Radiation*. Springer, Boston, MA (1987); Lu, S.-T., W. G. Lotz, and S. M. Michaelson "Advances in microwave-induced neuroendocrine effects: The concept of stress." *Proc. IEEE* 68: 73. (1980).
- ¹⁴ Section 704(a) of the 1996 Act expressly preempts state and local government regulation of the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radiofrequency emissions to the extent that such facilities comply with the FCC's regulations concerning such emissions. 47 U.S.C. §332(c)(7)(B)(iv).
- ¹⁵ "The SAR limits for general population/uncontrolled exposure are 0.08 W/kg, as averaged over the whole body, and a peak spatial-average SAR of 1.6 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit is 4 W/kg, averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Exposure may be averaged over a time period not to exceed 30 minutes to determine compliance with general population/uncontrolled SAR limits." 47 CFR § 1.1310 - Radiofrequency radiation exposure limits., FCC Publication, Retrieved from Cornell Law School. (2013).
- ¹⁶ B. Blake Levitt, editor, "Cell Towers - Wireless Convenience, or Environmental Hazard?" Proceedings of the Cell Towers Forum, State of the Science / State of the Law, New Century Publishing (2000).
- ¹⁷ Lai and Singh, (1996).
- ¹⁸ Lai, H., and Narendra P. S., "Melatonin and a spin-trap compound block radiofrequency electromagnetic radiation-induced DNA strand breaks in rat brain cells." *Bioelectromagnetics: Journal of the Bioelectromagnetics Society, The Society for Physical Regulation in Biology and Medicine, The European Bioelectromagnetics Association* 18.6: 446-454 (1997).
- ¹⁹ Phillips J, et al, "DNA damage in molt-4 lymphoblastoid cells exposed to cellular telephone radiofrequency fields in vitro." *Bioelectrochemistry and Bioenergetics* 45:103-110.(1998).
- ²⁰ Slesin, Ed. "REFLEX Report Highlights RF-Induced DNA Breaks." *Microwave News*, December 2004, accessed at: <https://microwavenews.com/news-center/reflex-report-highlights-rf-induced-dna-breaks>
- ²¹ Blank, M., and Goodman R., "Comment: a biological guide for electromagnetic safety: the stress response." *Bioelectromagnetics: Journal of the Bioelectromagnetics Society, The Society for Physical Regulation in Biology and Medicine, The European Bioelectromagnetics Association* 25.8: 642-646 (2004).
- ²² Zhao, et al, "Exposure to Cell Phone Radiation Up-Regulates Apoptosis Genes in Primary Cultures of Neurons and Astrocytes." *Science Digest* 412: 34-38 (2007).
- ²³ Adad, et al, "Fetal Radiofrequency Radiation Exposure from 800-1900 MHz-rated Cellular Telephones Affects Neurodevelopment and Behavior in Mice." *Science Reports* 2:312 (2012).
- ²⁴ Inkinci, et al, "The Effects of Prenatal Exposure to a 900 MHz Electromagnetic Field on Hippocampus Morphology and Learning Behavior in Rat Pups." *NeuroQuantology*, V11 No. 24. (2013).
- ²⁵ Odaci, et al, "The Effects of 900 MHz Electromagnetic Field Applied in the Prenatal Period on Spinal Cord Morphology and Motor Behavior in Female Rat Pups." *NeuroQuantology*, V11 No. 4: 573-581 (2013).
- ²⁶ International Agency for Research on Cancer (IARC), " IARC classifies radiofrequency electromagnetic fields as possibly carcinogenic to humans," press release #208, May, 2011. Accessed at https://www.iarc.fr/wp-content/uploads/2018/07/pr208_E.pdf
- ²⁷ Actions from Peer Review of the Draft NTP Technical Reports on Cell Phone Radiofrequency Radiation, https://ntp.niehs.nih.gov/ntp/about_ntp/trpanel/2018/march/actions20180328_508.pdf (2018).
- ²⁸ Melnick, R., "There's a clear cell phone-cancer link, but FDA is downplaying it." *The Hill*. <https://thehill.com/opinion/healthcare/416515-theres-a-clear-cell-phone-cancer-link-but-fda-is-downplaying-it> (2018).
- ²⁹ Falconi, et al, "Report of final results regarding brain and heart tumors in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz GSM base station environmental emission." *Environmental Research Volume* 165, August 2018, Pages 496-503
- ³⁰ BioInitiative Working Group. Sage, C. and Carpenter D., Editors. *BioInitiative Report: A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Radiation*, www.bioinitiative.org, (2012).

- ³¹ Pearce, Mark S., et al., "Radiation exposure from CT scans in childhood and subsequent risk of leukaemia and brain tumours: a retrospective cohort study." *The Lancet* 380.9840: 499-505 (2012).
- ³² Phillips, J. L., Singh, N. P., & Lai, H., "Electromagnetic fields and DNA damage." *Pathophysiology*, 16(2-3), 79-88. (2009).; Abdollahi et al, "Pesticides and oxidative stress: a review." *Medical Science Monitor*, 10(6), RA141-RA147. (2004).; Ercal, N., Gurer-Orhan, H., & Aykin-Burns, N., "Toxic metals and oxidative stress part I: mechanisms involved in metal-induced oxidative damage." *Current topics in Medicinal Chemistry*, 1(6), 529-539. (2001).
- ³³ Simkó, M., "Cell type specific redox status is responsible for diverse electromagnetic field effects." *Current Medicinal Chemistry*, 14(10), 1141-1152. (2007).; Consales, C., Merla, C., Marino, C., & Benassi, B. "Electromagnetic fields, oxidative stress, and neurodegeneration." *International Journal of Cell Biology*, (2012).
- ³⁴ Sivani, S., & Sudarsanam, D. "Impacts of radiofrequency electromagnetic field (RF-EMF) from cell phone towers and wireless devices on biosystem and ecosystem-a review." *Biology and Medicine*, 4(4), 202. (2012).
- ³⁵ Thannickal, V. J., & Fanburg, B. L. "Reactive oxygen species in cell signaling." *American Journal of Physiology-Lung Cellular and Molecular Physiology*, 279(6), L1005-L1028. (2000).; Valko, M., Rhodes, C., Moncol, J., Izakovic, M. M., & Mazur, M., "Free radicals, metals and antioxidants in oxidative stress-induced cancer." *Chemico-biological Interactions*, 160(1), 1-40. (2006).
- ³⁶ Belpomme, D., Campagnac, C., & Irigaray, P. "Reliable disease biomarkers characterizing and identifying electrohypersensitivity and multiple chemical sensitivity as two etiopathogenic aspects of a unique pathological disorder." *Reviews on Environmental Health*, 30(4), 251-271. (2015).; Cristani, M., Speciale, A., Saija, A., Gangemi, S., Lucia Minciullo, P., & Cimino, F., "Circulating advanced oxidation protein products as oxidative stress biomarkers and progression mediators in pathological conditions related to inflammation and immune dysregulation." *Current Medicinal Chemistry*, 23(34), 3862-3882. (2016).; Piwowar, A., "The advanced oxidation protein products as potential diagnostic and prognostic factor in diseases of the indicated participation of oxidative stress." *Advances in Hygiene and Experimental Medicine* (Online Polish Translation), 68, 446-458. (2014).
- ³⁷ Mrakic-Spota, S., Gussoni, M., Montorsi, M., Porcelli, S., & Vezzoli, A., "A quantitative method to monitor reactive oxygen species production by electron paramagnetic resonance in physiological and pathological conditions." *Oxidative Medicine and Cellular Longevity*, (2014).; Pavelescu, L., "On reactive oxygen species measurement in living systems." *Journal of Medicine and Life*, 8(Spec Issue), 38. (2015).; Gomes, A., Fernandes, E., & Lima, J. L., "Fluorescence probes used for detection of reactive oxygen species." *Journal of Biochemical and Biophysical Methods*, 65(2-3), 45-80. (2005).
- ³⁸ Pall, M. L., "Electromagnetic fields act via activation of voltage-gated calcium channels to produce beneficial or adverse effects." *Journal of Cellular and Molecular Medicine*, 17(8), 958-965. (2013).; Pilla, A., "Electromagnetic fields instantaneously modulate nitric oxide signaling in challenged biological systems." *Biochemical and Biophysical Research Communications*, 426(3), 330-333. (2012).
- ³⁹ Pall, M. L., "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." *Reviews on Environmental Health*, 30(2), 99-116. (2015).; Panagopoulos, D. J., "Electromagnetic interaction between environmental fields and living systems determines health and well-being." *Electromagnetic Fields: Principles, Engineering Applications and Biophysical Effects*, 87-130. (2013).; Becker, R. O., & Selden, G., "The Body Electric: Electromagnetism and the Foundation of Life." William Morrow & Company, Inc., New York. (1985).
- ⁴⁰ Splawski et al, "Cav1. 2 calcium channel dysfunction causes a multisystem disorder including arrhythmia and autism." *Cell*, 119(1), 19-31. (2004).
- ⁴¹ Panagopoulos, D. J., "Electromagnetic interaction between environmental fields and living systems determines health and well-being." *Electromagnetic Fields: Principles, Engineering Applications and Biophysical Effects*, 87-130. (2013).; Imaizumi, T., Schroeder, J. I., & Kay, S. A., "In SYNC: the ins and outs of circadian oscillations in calcium." *Sci. STKE*, 2007(390), pe32-pe32. (2007).; Splawski et al, "Cav1. 2 calcium channel dysfunction causes a multisystem disorder including arrhythmia and autism." *Cell*, 119(1), 19-31. (2004).; Plumridge, S., "Understanding How Calcium Channels Open and Close" Northwestern Medicine New Center, (2017).; Cain, S. M., & Snutch, T. P., "Voltage-gated calcium channels in epilepsy." *Epilepsia*, 51, 11-11. (2010).; Tyson, J. R., & Snutch, T. P., "Molecular nature of voltage-gated calcium channels: structure and species comparison." *Wiley Interdisciplinary Reviews: Membrane Transport and Signaling*, 2(5), 181-206. (2013).
- ⁴² Pall, M. L., "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." *Reviews on Environmental Health*, 30(2), 99-116. (2015).
- ⁴³ Raines, J., "Electromagnetic Field Interactions with the Human Body: Observed Effects and Theories." Nasa Report (1981).
- ⁴⁴ "Defense Intelligence Agency: Biological Effects of Electromagnetic Radiation (Radio waves and Microwaves) in Eurasian Communist Countries." Prepared by Army Medical Intelligence and the office of the Surgeon General. (1975).
- ⁴⁵ "Efforts By The Environmental Protection Agency To Protect The Public From Environmental Nonionizing Radiation Exposures." United States General Accounting Office. CED-78-79, (1978).; "US EPA Office of Air and Radiation and Office of Research and Development: Summary of Results of the April 26-27, 1993 Radiofrequency Radiation conference." United States, EPA. (1995).
- ⁴⁶ Americans with Disabilities, <https://www.access-board.gov/research/completed-research/indoor-environmental-quality/>
- ⁴⁷ "International Association of Firefighters: Division of Occupational Health, Safety and Medicine. Position on the Health Effects from Radiofrequency/Microwave (RF/MW) Radiation in Fire Department Facilities." (2011).
- ⁴⁸ Belpomme, D., Campagnac, C., & Irigaray, P., "Reliable disease biomarkers characterizing and identifying electrohypersensitivity and multiple chemical sensitivity as two etiopathogenic aspects of a unique pathological disorder." *Reviews on environmental health*, 30(4), 251-271. (2015).; Sage, C. "The implications of non-linear biological oscillations on human electrophysiology for electrohypersensitivity (EHS) and multiple chemical sensitivity (MCS)." *Reviews on Environmental Health*, 30(4), 293-303. (2015).
- ⁴⁹ Waldmann-Selsam, C., Balmori-de la Puente, A., Breunig, H., & Balmori, A. "Radiofrequency radiation injures trees around mobile phone base stations." *Science of the Total Environment*, 572, 554-569. (2016).
- ⁵⁰ "BioInitiative Working Group." Sage, C. and Carpenter D., Editors. *BioInitiative Report: A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Radiation*, www.bioinitiative.org, (2012).; Sivani, S., & Sudarsanam, D., "Impacts of radiofrequency electromagnetic field (RF-EMF) from cell phone towers and wireless devices on biosystem and ecosystem-a review." *Biology and Medicine*, 4(4), 202. (2012); Alfonso Balmori Martínez, "The Effects of Microwave Radiation on Wildlife: Preliminary Results." http://www.emrpolicy.org/litigation/case_law/beebe_hill/balmori_wildlife_study.pdf (2003).

- ⁵¹ Cucurachi, S., Tamis, W. L., Vijver, M. G., Peijnenburg, W. J., Bolte, J. F., & de Snoo, G. R. "A review of the ecological effects of radiofrequency electromagnetic fields" (RF-EMF). *Environment International*, 51, 116-140. (2013).
- ⁵² "Report on possible impacts of communication towers on wildlife including birds and bees." Ministry of Environment and Forests. (2011).
- ⁵³ Sivani, S., & Sudarsanam, D., "Impacts of radiofrequency electromagnetic field (RF-EMF) from cell phone towers and wireless devices on biosystem and ecosystem-a review." *Biology and Medicine*, 4(4), 202. (2012).
- ⁵⁴ Schwarze, S. et al, "Weak broadband electromagnetic fields are more disruptive to magnetic compass orientation in a night-migratory songbird (*Erithacus rubecula*) than strong narrow-band fields." *Frontiers in Behavioral Neuroscience*, 10, 55. (2016); Engels, S. et al, "Anthropogenic electromagnetic noise disrupts magnetic compass orientation in a migratory bird." *Nature*, 509(7500), 353. (2014); Lázaro, A. et al, "Electromagnetic radiation of mobile telecommunication antennas affects the abundance and composition of wild pollinators." *Journal of insect conservation*, 20(2), 315-324. (2016); Dalio, J. S., "Effect of electromagnetic radiations on *Apis mellifera*." *J. Res. Agric. Animal Sci*, 2. (2015); Darney, K. et al, "Effect of high-frequency radiations on survival of the honeybee (*Apis mellifera* L.)." *Apidologie*, 47(5), 703-710. (2016); Cammaerts, M. C., "Is Electromagnetism one of the causes of the CCD? A work plan for testing this hypothesis." *Journal of Behavior*, 2(1), 1006. (2017).
- ⁵⁵ "UW Scientist Henry Lai Makes Waves in the Cell Phone Industry," *Seattle Times*, (2011).
- ⁵⁶ "BioInitiative Working Group." Sage, C. and Carpenter D., Editors. *BioInitiative Report: A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Radiation*, www.bioinitiative.org, (2012); Levitt, B. B., & Lai, H., "Biological effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays." *Environmental Reviews*, 18(NA), 369-395. (2010).
- ⁵⁷ EMF Scientists Appeal to the United Nations and the WHO for more protective EMF guidelines. EMFScientist.org. https://emfscientist.org/images/docs/International_EMF_Scientist-Appeal.pdf (2015).
- ⁵⁸ Kostoff, R. N., and GY Lau, C., "Modified health effects of non-ionizing electromagnetic radiation combined with other agents reported in the biomedical literature." *Microwave effects on DNA and proteins*. Springer, Cham, 97-157. (2017); Pall, M. L., "Electromagnetic fields act via activation of voltage-gated calcium channels to produce beneficial or adverse effects." *Journal of Cellular and Molecular Medicine*, 17.8: 958-965. (2013).
- ⁵⁹ The Precautionary Principle. (n.d.). Retrieved from <http://www.precautionaryprinciple.eu/>

Lemos, June

From: Rebecca Aum <freelightone7@gmail.com>
Sent: Wednesday, October 30, 2019 3:16 PM
To: Lemos, June
Subject: microwave towers

Dear Fort Bragg city officials,

I object to 4G and 5G microtowers in Fort Bragg based on the adverse effect on our health, safety, fire risk, aesthetics, impacts on the environment and excessive energy usage it demands.

Thank you for caring about our community health and independence.

Rebecca Aum

Lemos, June

From: Sandi Maurer <EMFSafe@sonic.net>
Sent: Saturday, October 26, 2019 9:19 AM
To: Lemos, June; Miller, Tabatha; CDD User; Lee, Will; Norvell, Bernie; Morsell-Haye, Jessica; Peters, Lindy; Albin-Smith, Tess
Subject: City council meeting 10-28-19 item 8B, Fort Bragg's Guidelines & Standards for Telecommunication Facilities

Fort Bragg City staff, planners, and council,

My family vacations in Fort Bragg and we care very much about reducing EMF (electromagnetic fields and wireless radiation) in the environment to protect people, children, birds, bees and nature. You are probably aware the New York Times reported that 30% of birds have disappeared. An article in today's Press Democrat stated butterflies are disappearing. Independent peer-reviewed science shows EMF is harmful to people and nature. Please see this letter to the City of Sebastopol opposing small cell towers which includes the science of harm: <http://emfsafetynetwork.org/wp-content/uploads/2018/05/Letter-to-Seb-Verizon-5G.pdf>

This flyer also has links to science of harm to bees and birds: <http://emfsafetynetwork.org/honey-bee-says-stop-5g/>

We object to 4G and 5G "small cell" towers in Fort Bragg based on the adverse effects on our health, safety, fire risk, devaluation of properties, aesthetics, impacts on the environment and excessive energy usage it demands.

The City of Seaside recently rejected 4 small cell towers. The reasons for denial were primarily based on visual/view shed impacts, loss of property value, and their municipal code that states projects will not adversely impact the character of the community and its rights of way.

Thank you for your consideration,

Sandi Maurer,
Director, EMF Safety Network
PO Box 1016
Sebastopol CA 95473
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www.emfsafetynetwork.org
Save Lives, Save Nature, Reduce EMFs

Lemos, June

From: Annemarie <aweibel@mcn.org>
Sent: Tuesday, October 22, 2019 8:48 AM
To: Lee, Will; Norvell, Bernie; Morsell-Haye, Jessica; Peters, Lindy; Albin-Smith, Tess; Miller, Tabatha; Lemos, June; Varga, Tom; CDD User
Cc: Jacob Patterson
Subject: No wireless facilities next to homes, schools and parks in Fort Bragg

Please include in the public record.

To the Fort Bragg City Council, City Manager, Planning Commission, and Public Works Department,

I am urging you to adopt and enforce a strict wireless facilities ordinance, resolution and guidelines and develop a plan that maintains wireless availability without destroying our local values and aesthetics of our town.

I encourage you not to allow small wireless facilities (SWF) in front of our homes, next to schools and parks. If we don't act now, the major carriers will have the right to install them in Fort Bragg. Erecting industrial structures looming over homes with bulky utility boxes strapped to them or stacked on the ground will utterly destroy the character of our town. Small wireless facilities are not small and their effect is not minor.

I urge you to hold a workshop to educate the public and City representatives as well as form a Telecommunications Infrastructure Committee that includes experts (city representatives, an engineer, a lawyer and community members) to monitor the development, implementation, and revision of rules and guidelines governing wireless facilities and promote fiber optic infrastructure. I urge you to create a map (master plan) depicting residential, business, and coastal zones, current and known future antenna locations (companies that are also installing big towers & Caltrans), including downtown wifi.

I believe that placing small wireless facilities next to homes, schools and parks will ruin the aesthetics of Fort Bragg. Wireless facilities will create visual blight, destroy views and detract from the public's enjoyment. In addition trees that have their canopies sharply pruned and are cut down to accommodate wireless facilities are also robbing us of oxygen and shade. No antennas should be installed next to historic buildings on Main Street between Redwood and Spruce Street and also not in front of the Weller House. The scenic value of out town also needs to be considered.
<https://www.govtech.com/policy/California-Supreme-Court-Sides-with-Cities-in-Small-Cell-Faceoff.html>

Installing SWF's will create a dangerous precedent. Other communities came up with very strict regulations. Once installed, the wireless carriers have even more legal power to add additional parts and change the technology, increase the RF-EMF, make antennas higher, bulkier, and more of an eyesore. These antennas could metastasize to hundreds more towers – there is no clear limiting principle to stop the spread. All 26 national carriers could potentially put up these wireless facilities in front of houses, schools, or parks. Permits should only be reissued yearly with re-application and not upgraded without a full new application process.

SWF will tank property values. Studies have determined that homes in the blast radius of radio frequency-emitting cell towers lose 20% or more of their property value. The existence of a cell tower near a home MUST be included in the disclosure packet upon sale. Diminished property values also lead to reduced property taxes. Many locals and tourists will choose not to live, work and play anymore in Fort Bragg if we can not keep the City free of additional wireless technology.

SWF's will endanger safety. These facilities have attracted criminals and vandals that are attracted by the copper.

SWF's threaten health. Bioeffects are clearly established to occur with very low exposure levels (non-thermal levels) to electromagnetic fields and RF radiation exposures. Radio frequency (RF) emissions above the federal guidelines that the proposed small wireless facilities emit have been linked to cancer, heart problems, diabetes, Alzheimers, breaking DNA, infertility, depression, insomnia and causing many other serious adverse health effects. These antennas could affect hundreds of homes in the emission radius. In fact, federal law requires the posting of a big warning sign on each antenna warning that the area exceeds federal guidelines for RF emissions. Many cities adjacent to Silicon Valley have opposed these wireless facilities and are sending their children to Waldorf Schools where there is NO technology.

Co-location of SWF's (multiple antennas on a single pole) produces a huge eyesore, does not reduce clutter and draws more attention do to the extra hardware. Poles become top-heavy (90 lbs.) and expose citizens to higher doses pf radiation. Electromagnetic sensitivity is recognized as a disability under the American Disabilities Act (ADA). It trumps the Federal Communications Commission (FCC) guidelines from 1996.

<https://assembly.coe.int/nw/xml/XRef/Xref-XML2HTML-en.asp?fileid=17994>

<http://www.electrosmogprevention.org/american-disabilities-act-accommodations-for-rf-emf/>

Applicant's General Liability Insurance needs to cover health and aesthetic standards, needs to be \$2 million for each occurrence and \$4 million in the aggregate to protect the city from claims and suits for bodily injury and property damage. The insurance must name the city and its elected and appointed council members, boards, commissions, officers, officials, agents, consultants, employees and volunteers as additional named insureds, be issued by an insurer admitted in the State of California with a rating of at least an A.

None of the insurance companies will cover any damage or illness caused by electromagnetic radiation and there is zero clarity as to what entity will bear legal responsibility for damage to life, limb and property arising from exposure to 5G, whether ground - or space-based.

The International Appeal to Stop 5G on Earth and in Space has now been translated into 30 languages. It has been signed, thus far, by more than

130,000 individuals and more than 1,100 organizations from 203 countries and territories including 3,381 scientists, 1,913 medical doctors, 5,848 engineers, 3,525 psychologists, social workers and psychotherapists, and 3,052 nurses. <https://www.cellphonetaskforce.org/5g-space-appeal/>

SWF's can create fire hazards. The 2007 Malibu Canyon fire was sparked by wireless equipment attached to a wooden utility pole, The blaze burned 3,800 acres and destroyed dozens of homes and vehicles.

Lithium-ion batteries in the back-up generators can catch on fire and explode. Some towers have toppled over do to high winds or earthquakes.

Antenna towers attract lightning strikes to a greater extent than mountain peaks at similar elevations.

<http://www.electronicssilentpring.com/primers/cell-towers-cell-phones/cell-tower-fires-collapsing/>

Fort Bragg can't approve these antennas as these proposals are not "the least intrusive" way to address a "significant gap" in wireless coverage. As line of sight, rain and trees do not hinder 5G SMF's there needs to be a 2,500 ft. setback in residential zones. We already have good coverage here. If not sufficient, we need to promote fiber optic infrastructure and other feasible and available options and locations where people can gather in public places, socialize and use the facilities jointly like coffee shops, the library, community centers, the Granges, senior centers, etc.

<https://www.youtube.com/watch?v=FwAsr1pC13Q>

5G is damaging to to people, plants and animals. As a "Bee City" we need to be aware of the damage this technology causes.

<http://emfsafetynetwork.org/honey-bee-says-stop-5g/>

Other cities involve their health department to study the health consequences of this technology.

2G, 3G and 4G are patented as communication technologies. We can protect ourselves from these frequencies by hard wiring our devices. We will soon have 20 billion more devices, deploy 800,000 5G antennas and launch 20,000 satellites and unmanned drones transmitting 5G signals into air, land and sea 24/7.

<https://www.globalresearch.ca/giant-5g-drones-hawaii-skies/5686969>

To the autonomic nervous system 5G is a non-stop assault with a silent, invisible jackhammer and is a part of the electronic weapons technology.

The patents are held by defense contractors, not telecommunications companies.

<https://www.qualcomm.com/media/documents/files/2019-future-of-5g-presentation.pdf>

https://www.qualcomm.com/news/onq/2019/09/24/5g-launches-globally-what-comes-next?empid=fierce_wireless_paid_october2019

Stop unknown proposed cell towers from being grandfathered in next to homes, schools and parks.

Do not tell us that your “hands are tied”. Many other communities are creating strong legal deterrents to 5G technology and have initiated legal action. We can't pave the way so that industry-friendly consultants saturate the entire community with microwave radiation. The telecommunication industry now has more lobby money in congress than any other industry in history. Billions of dollars of influence - influence that is making its way into state and city government offices around the country.

Fort Bragg's regulations must be amended to require the following before any wireless infrastructure is subject to an official decision: 90 days advance individualized notice to homeowners and neighbors who live within 2,500 ft., a public hearing at least 20 days before the determination is made and a decision by a vote of the City Council. An appeal can not be cost prohibitive (not \$1,000).

The deployment of additional equipment for “Smart City”, Internet of Things (IoT), Artificial Intelligence (AI) and Facial Recognition goes beyond thoughts of a controlled society written about in the book 1984.

Our privacy, security and freedom would be compromised in every possible way. This is morally wrong.

Please follow your mission statement and resolutions by supporting quality public services, quality of life, community health and safety, preserve the natural beauty, safe streets and sustainable development.

Sincerely, Annemarie Weibel

Lemos, June

From: Annemarie <aweibel@mcn.org>
Sent: Monday, August 12, 2019 11:02 AM
To: Lee, Will; Peters, Lindy; Morsell-Haye, Jessica; Albin-Smith, Tess; Norvell, Bernie; Miller, Tabatha; Lemos, June
Subject: please postpone the public hearing about item # 7
Attachments: MendocinoSites.jpg

To city council and city manager,
Please postpone the public hearing about item # 7 until the council and planning commission have additional information and the public has a chance to get more information. To be talking about fees when the issue should focus on the purpose, safety and location of small wireless facilities and possible ongoing use of City Rights-of-Way for small wireless facilities is putting the cart before the horse.

During the Special City Council meeting on April 12, 2019 the topic was:
Introduction and Adoption of Urgency Ordinance to Adopt Aesthetic Guidelines for Wireless Telecommunications Facilities in the City of Fort Bragg. To a layperson it sounds good to have aesthetics considered when dealing with telecommunications facilities, but adding to the already huge network of wireless communication facilities in the county additional ones in Fort Bragg close to where people shop, push strollers, where children walk, and people gather is not a good idea.

Many peer reviewed studies warn of the dangers to people, plants & animals. Additionally we are also bombarded from satellites that are launched into low Earth orbit.

You were asked by Jacob Turner of SeaKay (provider of high-speed internet service) to not consider a building-mounted mast that is 12 ft.

in height and 6 in. in diameter a telecommunications tower. Further Reach is also providing services. The map that AT&T provides to the County lists 20 existing towers and 14 planned towers. With the Connect America Fund AT&T was going to install 18 towers with federal grant money. Verizon is busy installing their microwaves transmitters.

We need fiber-optic cables versus cell towers that helps with our telephone system, the cable TV system and the Internet. They are a viable alternative, are completely safe (and at least 100 times faster than WiFi), and will be well worth the time and effort needed to install.

Shay Wachtel requested more education on 5G to inform the public and others suggested to provide education to the public regarding wireless telecommunications facilities and provide sources where people can obtain more information. It was also suggested that the distance to residential and school locations and the effects of wireless on humans should be considered.

What has the city done before and after?

I did see an application for a "dig once" policy to minimize the # and scale of excavations when installing telecommunications infrastructure in rights of way that was approved by the Public Works & Facilities Committee on July 10.

The April 22, 2019 City Council discussed Mendocino's County Digital Infrastructure Plan 2019-2025. The plan lists to also develop fiber-based technology. The council adopted the RESOLUTION NO. 4160-2019 RESOLUTION OF THE FORT BRAGG CITY COUNCIL ADOPTING THE MENDOCINO COUNTY DIGITAL INFRASTRUCTURE PLAN 2019-2025 PREPARED BY THE ECONOMIC DEVELOPMENT & FINANCING CORPORATION. I was glad to read that "there is a preference for high-speed internet to be delivered through underground fiber instead of wireless delivery".

<https://city.fortbragg.com/DocumentCenter/View/9709/4160-2019?bidId=>

On July 22 during public comment I shared with the city council my concern about radio frequency electromagnetic fields. I asked the council to consider having a joint meeting (for City Council & Planning Commission) where Dafna Tachover would educate both groups about EMF's, wireless vs. wired telecommunication facilities and 5G. In the past couple of months Dafna gave over 20 public lectures. She gave lectures to private groups and met, spoke with and consulted with local activists groups. She also met with numerous mayors, city council members, city attorneys and city managers. Dafna is busy traveling between Israel, New York & the Bay area.

I also on the same day talked to Will Lee, Jessica Morsell-Haye and Michelle Roberts. Both Michelle & Jessica were going to talk to the city manager and follow up on the issue. Dafna Tachover is willing to give a presentation to the City Council and the Planning Commission.

I have not heard if anyone contacted Dafna Tachover. She is invited to speak at the international environmental conference "Soil not Oil" that will be held in San Francisco on Sept. 9-10 at the Grey Area Theater. This is their 5th annual conference.

This is the first time the conference will be addressing the impact of 5G and wireless "smart" technology on the environment, including on humans, plants, animals and the climate.

You can imagine my surprise when I read that the topic for today's public hearing (item #7) is to Receive Report, Conduct Public Hearing and Consider Adoption of City Council Resolution Adopting Fees for Services Related to Processing Applications for Small Wireless Facilities and Ongoing Use of City Rights-of-Way for Small Wireless Facilities. Are we talking 4G or 5G?

I am in favor of doing what has been suggested:

Providing more education on 5G to inform the public and provide education to the public regarding wireless and provide sources where people can obtain more information considering the distance to residential and school locations and consider the effects of wireless on humans.

Please postpone the public hearing about item # 7 until the council and planning commission have additional information and the public has a chance to get more information.

The following is from <https://www.5gspaceappeal.org/the-appeal>
INTERNATIONAL APPEAL to Stop 5G on Earth and in Space

"Governments are also enacting laws to make wireless facilities a permitted use in all public rights-of-way.[113] To date, most wireless facilities have been located on private property at some distance from homes and businesses. In order for them to be spaced less than 100 meters apart as required by 5G, however, they will now be located on the sidewalk directly in front of homes and businesses and close above the heads of pedestrians, including mothers with babies.

Public notice requirements and public hearings are being eliminated.

Even if there were a hearing and 100 scientific experts were to testify against 5G, laws have been passed making it illegal for local authorities to take their testimony into consideration. US law, for example, prohibits local governments from regulating wireless technology "on the basis of the environmental effects of radio frequency radiation"[114] and courts have reversed regulatory decisions about cell tower placement simply because most of the public testimony was about health.[115] Insurers will not provide coverage against EMF risks,[116] and there is zero clarity as to what entity will bear legal responsibility for damage to life, limb and property arising from exposure to 5G, whether ground- or space-based.[117]

In the absence of an agreed comprehensive legal regime governing activities in outer space, legal liability for those activities is non-existent, despite the prospect of whole continents, the atmosphere and the oceans being put at risk by them."

For complete text & footnotes see links at <https://www.5gspaceappeal.org/the-appeal>

As of September 13, 2017 more than 180 scientists and doctors from 35 countries warned of potential serious health effects of microwave radiation health risks, including that arising from 5G wireless cell tower antennas and recommended 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.

They also noted that: "5G will substantially increase exposure to radio frequency electromagnetic fields (RF-EMF) on top of the 2G, 3G, 4G, Wi-Fi, etc. for telecommunications already in place. RF-EMF has been proven to be harmful for humans and the environment."

See the full text of their well-educated and researched warning to the general public about cell tower antennas here: <http://emfsafetynetwork.org/wp-content/uploads/2017/11/Scientist-5G-appeal.pdf>

Senate Bill (SB) 649 was not signed by Jerry Brown, but this is what was in the text. So how come city's are making money with this technology?

This bill would provide that a small cell, as defined, is a permitted use, subject only to a specified permitting process adopted by a city or county, if the small cell meets specified requirements. By imposing new duties on local agencies, this bill would impose a state-mandated local program. The bill would authorize a city or county to require an encroachment permit or a building permit, and any additional ministerial permits, for a small cell, as specified. The bill would authorize a city or county to charge 3 types of fees relating to these small cells: an annual charge for each small cell attached to city or county vertical infrastructure, an annual attachment rate, and a one-time reimbursement fee. The bill would require the city or county to comply with notice and hearing requirements before imposing the annual attachment rate. The bill would require an action or proceeding to challenge a fee imposed under the provisions of this bill to be commenced within 120 days of the effective date of the ordinance or resolution. This bill would require each wireless service provider, on or before July 1, 2019, and again on or before December 31, 2020, to submit a report to the Legislature specifying the number of, and geographical location by ZIP Code of, the small cells that the wireless service provider has commenced operating within the state during the 18 months preceding the date of each report.

Thanks for the consideration of my request, Annemarie Weibel

P.S.: Contact information for Dafna Tachover:

Dafna Tachover, Managing Director

Attorney (NY, Israel), MBA

phone: (845) 377 0211

<<http://WeAreTheEvidence.org>>

I attached the map that AT&T provides to the County (planned & existing sites).

Lemos, June

From: Annemarie <aweibel@mcn.org>
Sent: Monday, August 12, 2019 3:13 PM
To: Peters, Lindy; Lee, Will; Jessica Ballard; Norvell, Bernie; Albin-Smith, Tess; Miller, Tabatha; Lemos, June
Subject: What You Need To Know About 5G Wireless and "Small" Cells, please postpone the public hearing about item # 7
Attachments: What you need to know about 5G & small cells.jpg; 2 What you need to know about 5G & small cells.jpg

To city council members & city manager,
Please read this handout and consider not voting on item #7 tonight until you have had a chance to understand this new technology.

What You Need To Know About 5G Wireless and "Small" Cells

Thanks, Annemarie



What You Need To Know About 5G Wireless and “Small” Cells

“We 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...RF-EMF has been proven to be harmful for humans and the environment.”

— 2017 5G Scientific Appeal (signed by more than 200 scientists and doctors from 35 countries)

Nationwide, communities are being told by wireless companies that it is necessary to build “small cell” wireless facilities in neighborhoods on streetlight and utility poles in order to offer 5G, a new technology that will connect the Internet of Things (IoT). At the local, state, and federal level, new legislation and new zoning aim to streamline the installation of these 5G “small cell” antennas in public rights-of-way.

The radiation from small cells is not small: Wireless antennas emit microwaves — non-ionizing radiofrequency radiation — and essentially function as cell towers. Each installation can have over a thousand antennas that are transmitting simultaneously.

Millions of small cells to be built in front yards: The Federal Communications Commission estimates that millions of these wireless transmitters will be built in our rights-of-way, directly in front of our homes.

5G will add to — not replace — our current wireless technology: 5G will not only utilize current 3G and 4G wireless frequencies already in use but also add higher frequency — submillimeter and millimeter waves — in order to transmit data at superfast speeds.

Community authority is overruled: Communities are being stripped of their right to make decisions about this new technology. “Streamlining” means almost automatic approval. Public notice and public hearings are being eliminated. Even if every homeowner on the block opposes the antennas on their street, the opposition will be disregarded.

Scientists worldwide are calling for a halt to the 5G Roll-out: Over 200 scientists and doctors issued a declaration calling for a moratorium on the increase of 5G cell antennas citing human health effects and impacts to wildlife.

[Read the 2017 Scientific Appeal on 5G To the European Commission](#)

[Read the 2015 EMF Scientist Appeal to the United Nations](#)

[Read Letters From Dozens of Scientists on Health Risks of 5G](#)

Cumulative daily radiation exposure poses serious public health risks: Peer reviewed, published science indicates that exposures to wireless radiation can increase cancer risk, alter brain development and damage sperm. Most people are unaware that wireless technology was never tested for long-term safety, that children are more vulnerable and that the accumulated scientific evidence shows harm.

Decreased property values: Studies show property values drop up to 20% on homes near cell towers. Would you buy a home with a mini cell tower in the yard? [Read research showing decreased property value from cell towers near homes.](#)

Microwave antennas in front yards present several worker and public safety issues: Unions have already filed comments that workers were injured, unaware they were working near transmitting antennas. How will HVAC workers, window washers, and tree cutters be protected? The heavy large equipment cabinets mounted on poles along our sidewalks also present new hazards. Cars run into utility poles, often, what then? [US Dept of Labor letters on cell tower safety](#)

Fiber is the safe alternative: Worldwide, many regions are investing in wired fiberoptic connections which are safer, faster, more reliable, provide greater capacity, and are more cyber-secure. Read [“Re-Inventing Wires: The Future of Landlines and Networks,”](#) by the National Institute for Science, Law & Public Policy

www.ehtrust.org

All text in this document in blue is hyperlinked to resources for more information.

Please also see <https://ehtrust.org/factsheet-need-know-5g-small-cells-science-policy-public-health/> for additional resources.

KEY RESEARCH AND REPORTS

5G Frequencies Are Absorbed Into the Skin

Physicists found that the higher millimeter frequencies intended for 5G use are preferentially absorbed into the sweat duct at much higher rates than other organ tissues. Read two published studies "[The Modeling of the Absorbance of the Sub-THz Radiation by Human Skin](#)." [The human skin as a sub-THz receiver – Does 5G pose a danger to it or not?](#) Paul Ben-Ishai, PhD Lecture.

5G Frequencies Are Used As Weapons

Millimeter frequencies have the capacity to cause a severe burning sensation in the skin and are used by the U.S. Department of Defense in [crowd control guns](#) called [Active Denial Systems](#).

Landmark US National Toxicology Program (NTP) Study Finds "Clear Evidence of Cancer" and DNA Damage

The NTP [studies found](#) male rats exposed for two years to cell phone radiation developed significantly increased gliomas (brain cancer) and schwann cell tumors, the very same types of tumors increased in long-term human cell phone users. NIH/ NTP [presentation on DNA](#) results states "exposure to RFR has the potential to induce measurable DNA damage under certain exposure conditions." [Press Coverage](#), [Peer Review Report](#)

Cell Tower Radiation is Linked To Damage in Human Blood

A published study compared people living close and far from cell antennas and found people living closer to cellular antennas had changes in blood that predicts cancer development. Read [Zothansiana et al, 2017](#). Read a [Compilation of Research on Cell Tower Radiation](#)

Published Scientific Review on 5G Finds Adverse Effects

Scientific literature documents evidence of nonthermal cellular damage from wireless radiation used in telecommunications to DNA integrity, cellular membranes, gene expression, protein synthesis, neuronal function, the blood brain barrier, melatonin production, sperm damage and immune dysfunction. [Russell 2018](#)

Cellular Radiation Negatively Impacts Birds and Bees

Published research finds the frequencies alter bird navigation and disturb honeybee colonies. [Research on EMF and Bees](#). [Research on Wildlife](#)

RESOURCES

[Research on 5G and Cell Tower Radiation](#)

[A 5G Wireless Future: Will it give us a smart nation or contribute to an unhealthy one?](#) Santa Clara Medical Association Bulletin, Cindy Russell MD, 2017

[Letters by Scientists in Opposition To 5G Research on Cell Tower Radiation, 2017](#)

[Biological Effects from Exposure to Electromagnetic Radiation Emitted by Cell Tower Base Stations and Other Antenna Arrays, Levitt and Lai, 2010](#)

[Radiofrequency radiation injures trees around mobile phone base stations, Waldmann-Selsam et al., 2016](#)

[Department of Interior Letter on the Impact of Cell Towers on Migratory Birds, Willie R. Taylor Director, Office of Environmental Policy and Compliance, 2014](#)

[Anthropogenic radiofrequency electromagnetic fields as an emerging threat to wildlife orientation, Balmori, 2015](#)

[Briefing Memorandum On The Impacts from Thermal and Non-thermal Non-ionizing Radiation to Birds and Other Wildlife, Manville, 2016](#)

[Database of Worldwide International Policy To Reduce EMF](#)

[Youtube Scientific Videos on 5G](#)

TAKE ACTION

Contact local, state and federal elected officials in person.

Share this information with your friends, family and community.

Ask for government policy that reduces RFR exposure to the public.

Citizens in all states must organize and take action to halt legislation that increases cell antennas in neighborhoods.

LEARN MORE

[Federal Legislation To Know](#)

[US States With Streamlining Bills](#)

5G Small Cell Antennas To Be Placed On:

- Street lights
- Trashcans
- Utility poles
- Bus stops
- Sides of buildings

5 Reasons Why Small Cells Are Not Small

- Increased radiation near homes
- Refrigerator-sized equipment cabinet
- Drop in property values
- Taller poles
- Fixtures weigh hundreds of pounds

Crown Castle's 2016 10-K Annual Report says:

"If radio frequency emissions from wireless handsets or equipment on our wireless infrastructure are demonstrated to cause negative health effects, potential future claims could adversely affect our operations, costs or revenues... We currently do not maintain any significant insurance with respect to these matters."

[Read warnings](#) from Crown Castle, Verizon and other wireless companies.

The American Academy of Pediatrics says:

"An Egyptian study confirmed concerns that living nearby mobile phone base stations increased the risk for developing:

- Headaches
- Memory problems
- Dizziness
- Depression
- Sleep problems"

[AAP on Cell Towers](#)

Letter from oncologist Lennart Hardell MD & Colleagues:

"There is a substantial body of evidence that this technology is harmful to humans and the environment. The 5G millimeter wave is known to heat the eyes, skin and testes... Of particular concern are the most vulnerable among us — the unborn, children, the infirm, the elderly and the disabled. It is also expected that populations of bees and birds will drastically decline."

[2017 Scientific Letter](#)

Peer Reviewed Research Studies on Radiofrequency Radiation Have Found:

- Headaches
- Sperm damage
- Altered brain development
- Depression
- Neurological symptoms
- Hormone changes
- Memory problems
- Sleep problems
- Cancer

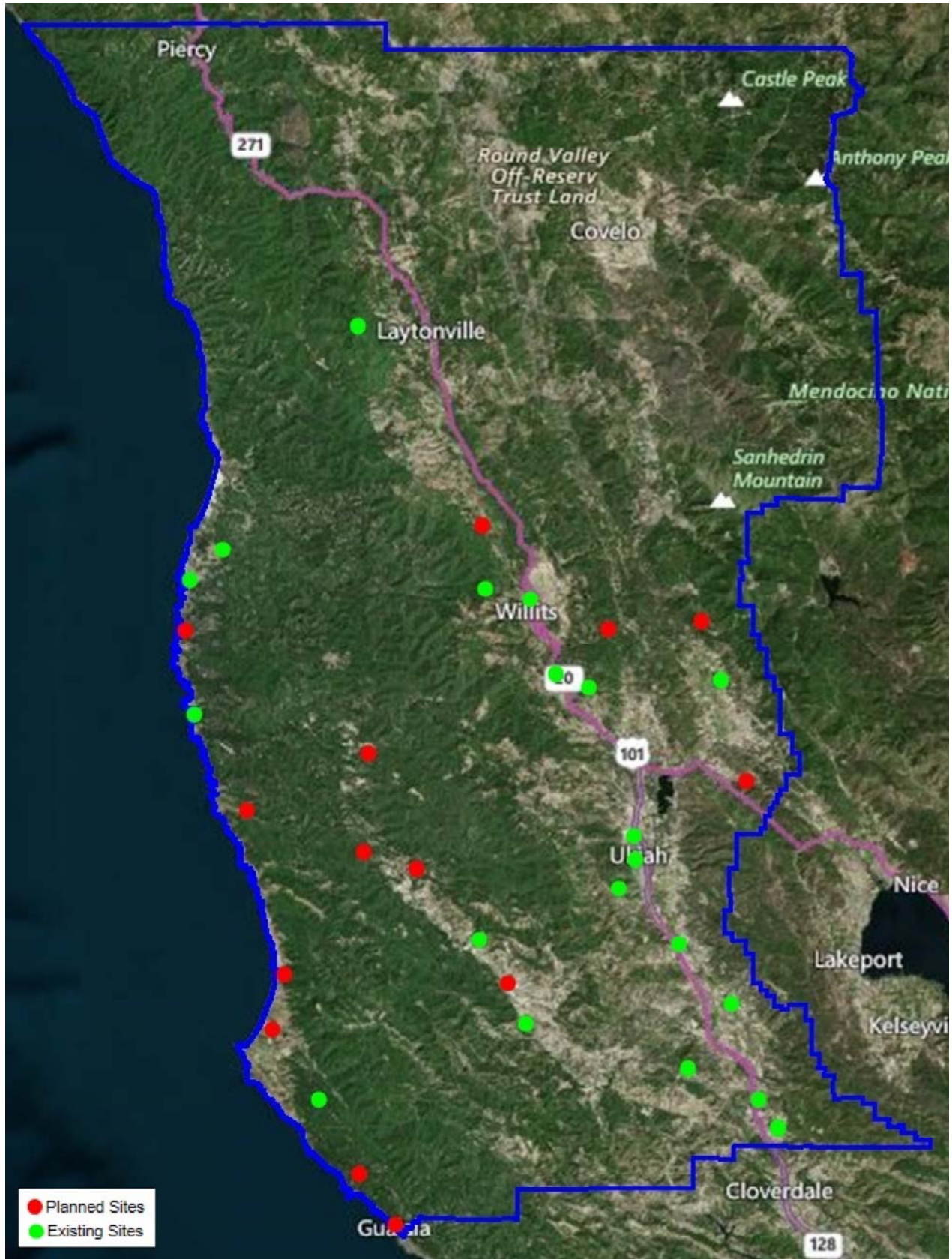
Science:

[BioInitiative 2012 Report by Independent Scientists](#)
[Dr. Moskowitz, University of California at Berkeley](#)
[Dr. Lennart Hardell Örebro University Sweden](#)
[The Baby Safe Project](#)
[WhatIs5g.info](#)

[Physicians for Safe Technology](#)
[Environmental Health Trust 5G Resources](#)

www.ehtrust.org

 ENVIRONMENTAL
HEALTH TRUST



Solutions

We recommend prudent avoidance of EMFs, which means being cautious, sensible, and reducing or avoiding EMFs when and where you can.



- Use a corded landline for your home and work place. *(remove cordless phones)*



- Use analog utility meters on your home. *(remove smart meters)*



- Use a wired router for internet connection for faster and safer service. *(avoid wi-fi)*



- Reduce cell phone use. Keep cell phones away from your body. Keep cell phones away from children. *(Best to use cell phones for emergencies only)*



- Learn more safety tips: www.emfsafetynetwork.org/safety-precautions/



Oppose 5G! 5G would add another layer of harmful radiation in our homes and communities. <https://goo.gl/Hj4XrV>

EMF Safety Network mission is to educate and empower people by providing science and solutions to reduce EMFs to improve lives, achieve public policy change, and obtain environmental justice.

Become a member! Membership dues are \$50 annually. To pay by check mail to EMF Safety Network or donate on our website.

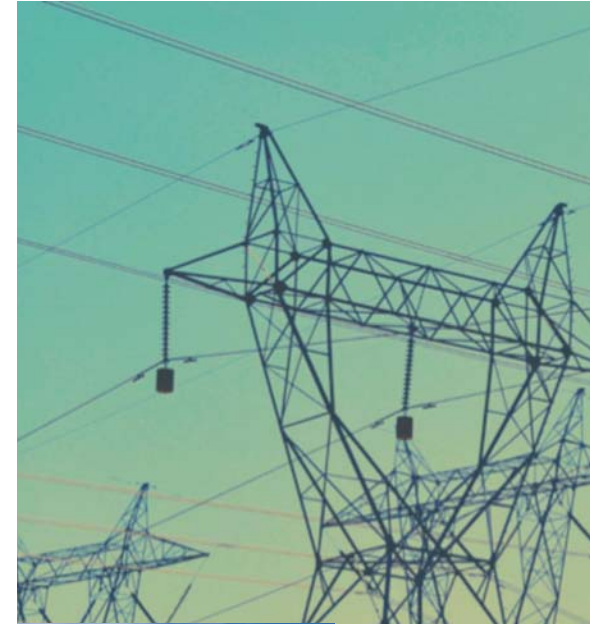


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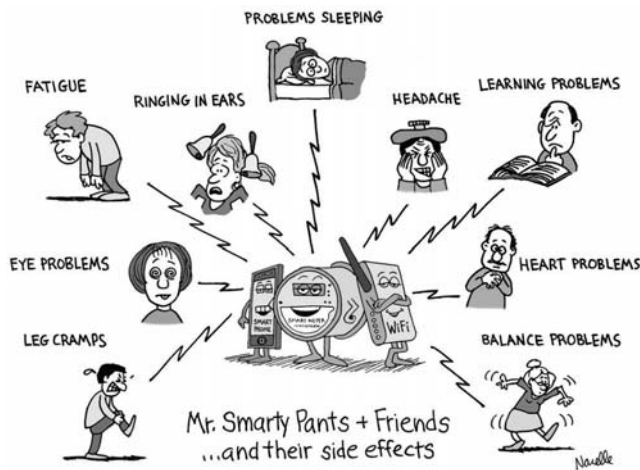
EMF Safety Network is a sponsored project of Ecological Options Network (EON) a 501 (c)(3) not-for-profit organization.

What are EMFs?



EMFs are electromagnetic fields. They include electric and magnetic fields, and wireless radiation emitted by cell towers, cell and cordless phones, smart meters, smart grid, wi-fi, computers, power lines, fluorescent lights, indoor wiring, appliances, cars, inverters and other electronic devices.

Why are EMFs a problem?



EMFs can cause fatigue, headaches, sleep problems, anxiety, ringing in the ears, heart problems, learning and memory disorders, fertility problems, electrosensitivity, increased cancer risk and more. Children, the ill, and the elderly are more vulnerable.

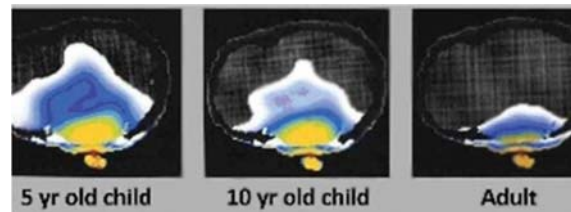
EMFs are now so common and widespread that they've become environmental pollution.



Studies show wireless radiation harms nature: birds, bees, and trees.

"Man-made electromagnetic fields impact all living organisms. We must reduce our dependence on wireless technologies."
Marie-Claire Cammaerts, PhD, Belgium

Studies show children's brains absorb more radiation than adults'



Brain scans of radiation absorption at different ages. Reprinted from O. Gandhi et al., IEEE Transactions on Microwave Theory & Techniques, 1996.

"The harmful effects of electromagnetic fields, regardless of their frequencies, are now scientifically settled. Pregnant women (the fetus) and children and adolescents are particularly vulnerable." Dominique Belpomme, MD, France

Aren't EMFs regulated by the government? Many common EMF devices sold today have not been proven safe for long term exposure. The Federal Communications Commission (FCC) safety guidelines are outdated. The FCC is promoting rapid expansion of higher frequency (5G) cell towers in our communities. The FCC cannot be relied on to protect public health or the environment.

Learn about the science: The International Agency for Research on Cancer at the World Health Organization classifies EMFs as possible carcinogens.
<https://goo.gl/9DQC6M>

The National Toxicology Program found clear evidence of cancer in rats from exposure to cell phone frequencies.
<https://goo.gl/jgh5kf>

The BioInitiative Reports reference more than 3,800 peer-reviewed published studies. The authors conclude that EMFs jeopardize global health and recommend stricter biologically-based standards and lower exposure limits. www.bioinitiative.org

Independent scientists who have published peer-reviewed studies on EMFs signed the International Scientists Appeal, which calls for greater public and environmental protections from EMF exposure.
www.emfscientist.org

The Honey Bee says: **STOP5G**

5th Generation Wireless Technology

Headline News

The harmful effects of EMFs on nature are scientifically based and have been under-reported for over a decade. Here are *just a few* facts most people would like to know.

- **Technology is quite literally destroying nature.** . . . with electromagnetic radiation from power lines and cell towers. . . 5G could increase threat. *Newsweek*, 2018
- **180 scientists and doctors from 35 countries** have signed a recommendation for a **5G moratorium**.
- **5G increases body temperature of insects.** *Pro Natura*, 2019
- **A \$30 million US National Toxicology Program (NTP)** study in 2018 found "clear evidence" that cell phone radiation is **linked to cancer**.
- **. . . unprecedented exposure interferes with the natural functioning** of humans, animals, and plants.
Dr. Ulrich Warnke: *Bees and Mankind: Destroying Nature by 'Electrosmog'*, 2009
- **"Birds disappearing mysteriously. . . bees under threat.** . . . increasing evidence EMF pollution such as cell towers, cell phones, cordless phones and wifi is a factor."
Dr. Andrew Goldsworthy, 2009 *The Birds, the Bees and EMF Pollution*
- **EMFs can cause cancer.**
(Hardell and Carlberg, 2018) (Soffritti, 2016) (Peleg, 2018)
- **Electromagnetic Fields A 'Credible Threat' To Wildlife**
Joel M. Moskowitz, Ph.D., *Principia Scientific International*, 2018

Take Action!

1. Contact your local, state and US representatives and tell them to stop 5G.
2. Reduce wireless use, see safety tips [here](#).
3. Find letter templates, view and download fliers to hand out, post and learn more.



Impact on Birds and Bees

- "Due to electromagnetic smog, honeybees are often unable to return to their hives (Harst et al., 2006; Favre, 2011; Sharma & Kumar 2010; Sahib, 2011), the resulting massive loss of workers then leads to a colony collapse (e.g. Harst et al. 2006; Sharma and Kumar 2010), which is why electromagnetic radiation has been suggested as one potential cause of colony collapse disorder (CCD) (e.g. Warnke 2009; Sahib 2011)" *Journal of Insect Conservation* (Lázaro et al, 2016)
- Radiation impacts on wild birds documented nest abandonment, plumage deterioration and death. Lab studies of chick embryos documented heart attacks and death. (Al Manville PhD USFWS, 2016)
- EMFs evoke aversive behavior, developmental anomalies and mortality in studied animal groups. (Ministry of Environment & Forests Report 2011 P6)

EMF
Safety Network
www.emfsafetynetwork.org

San Joaquin County Parents believe radiation from a 5G cell tower is causing cancer in school children. Doctors have diagnosed at least four kids from the county's elementary school system. Parents believe that one specific cell tower poses the biggest health concern.

"We had a doctor tell us that it's 100 percent environmental, the kind of tumor that he has," said Monica Ferrulli told CBS Sacramento.

Ferrulli's son, Mason, is one of the children diagnosed with cancer. The 5G cell tower is located on a path Mason walked on a daily basis prior to his diagnosis. Mason recently relapsed and is currently undergoing brain cancer treatments.

Joe Prime's son, Kyle, was diagnosed with kidney cancer in 2016.

"It just seems like coincidence is no longer a reason for all this illness," Prime told the network.

"Kids shouldn't be guinea pigs and we shouldn't be taking chances with the children's lives," he went on.

The district claims the towers are safe, however, some experts disagree. Concerns over 5G and cancer health risks are not new.

"I wouldn't send my kids there at all, it absolutely is dangerous," said Eric Windheim, an electromagnetic radiation specialist. "Children are still developing and their cells are still being divided. It's the worst possible time in their life to be exposed."

Windheim says that the tower transmits dangerous wireless frequencies. Those wireless frequencies travel upwards of 30 miles.

Parents are pushing to have the cell tower removed, but the district is defiant. The parents claim the district receives \$2,000 for allowing the tower.

The district sent letters to parents stating that the electric magnetic frequencies are "below federal standards."

GATESHEAD VILLAGE WINS – GETS 5G TAKEN DOWN

Mark Steele, a 5G campaigner, has been highlighting the dangers of a secret 5G rollout by Gateshead Council where residents are complaining of increased illness and Cancer in the affected area. There's enough evidence to conclude the new smart 5G arrays on the top of new LED lampposts emit Class 1 Radiation frequencies and should be treated as a danger to the Public. Gateshead Council ignorantly rebutted clear evidence and created false allegations on social media posts and printed leaflets stating that Mark Steele is spreading Pseudo Science and that the arrays are not dangerous or 5G:

They misused Police Powers to gag Mark Steele and yesterday he left a free man and Gateshead Council to fork out £11k of taxpayers money to cover the court cost amounting to woeful ignorance. In Court, none of the Council Officers could explain what 5G is; and their leading Government expert refused to attend the Court hearing. In conclusion, the Judge refused to gag Mark, stating:

“The public have a right to know.”

The Judge declared Mark Steele as a credible expert and engineer on EMF and GSM technologies, which proves Gateshead Council are liable for corruption, misleading the public, making people ill and attempting to discredit Mark Steele and all others such as Smombie Gate fighting 5G rollouts.

Smart City companies are going into Councils with amazing futuristic presentations detailing the first step, which is to install the 5G infrastructure, i.e. the lampposts on streets and motorways.

The benefits will be 24/7 Police surveillance that sees through walls; smart road signs; 4k live streaming on the move; driverless vehicles and public transport; mobile virtual reality; mobile augmented reality; and a fast connection for Elon Musk's new brain implant called the Neuralink giving people the Internet inside their mind. All these features are all a wet dream for Councils who will be the first ones to become Smart Counties because they will be able to increase taxes and the local economy in theory will thrive.

In reality, scientific evidence is mounting across the planet that EMF, RF, 3G, 4G, 5G, WiFi and WiGIG is causing Cancer, killing bees, driving out wildlife and lowering peoples quality of life. All because big business says it's good for the people, and they're continuing to mislead us all of the dangers of continuous use in close proximity and on the skin, let alone what 5G really is, which is an effective battlefield weapon.”

Scientists warn of potential serious health effects of 5G

September 13, 2017



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. 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. RF-EMF has been proven to be harmful for humans and the environment.

(Note: [Blue links](#) below are references.)

5G leads to massive increase of mandatory exposure to wireless radiation

5G technology is effective only over short distance. It is poorly transmitted through solid material. Many new antennas will be required and full-scale implementation will result in antennas every 10 to 12 houses in urban areas, **thus massively increasing mandatory exposure.**

With "[the ever more extensive use of wireless technologies](#)," nobody can avoid to be exposed. Because on top of the increased number of 5G-transmitters (even within housing, shops and in hospitals) according to estimates, "[10 to 20 billion connections](#)" (to refrigerators, washing machines, surveillance cameras, self-driving cars and buses, etc.) will be parts of the Internet of Things. All these together can cause a substantial increase in the total, long term RF-EMF exposure to all EU citizens.

Harmful effects of RF-EMF exposure are already proven

[More than 230 scientists from 41 countries](#) have expressed their "serious concerns" regarding the ubiquitous and increasing exposure to EMF generated by electric and wireless devices already before the additional 5G roll-out. They refer to the fact that "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, 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 [plants](#) and [animals](#).

After the scientists' appeal was written in 2015 additional research has convincingly confirmed serious health risks from RF-EMF fields from wireless technology. The world's largest study (25 million US dollar) [National Toxicology Program \(NTP\)](#), shows statistically significant increase in the incidence of *brain and heart cancer* in animals exposed to EMF below the ICNIRP (International Commission on Non-Ionizing Radiation Protection) guidelines followed by most countries. These results support results in human epidemiological studies on RF radiation and brain tumour risk. [A large number of peer-reviewed scientific reports](#) demonstrate harm to human health from EMFs.

The International Agency for Research on Cancer (IARC), the cancer agency of the World Health Organization (WHO), in 2011 concluded that EMFs of frequencies 30 KHz – 300 GHz are possibly [carcinogenic to humans \(Group 2B\)](#). However, new studies like the NTP study mentioned above and several epidemiological investigations including the latest studies on mobile phone use and brain cancer risks [confirm that RF-EMF radiation is carcinogenic to humans](#).

The [EUROPA EM-EMF Guideline 2016](#) states that "there is strong evidence that *long-term exposure to certain EMFs is a risk factor for diseases* such as certain cancers, Alzheimer's disease, and male infertility...Common EHS (electromagnetic hypersensitivity) symptoms include headaches, concentration difficulties, sleep problems, depression, lack of energy, fatigue, and flu-like symptoms."

We urge the EU:

- 1) To take all reasonable measures to halt the 5G RF-EMF expansion until independent scientists can assure that 5G and the total radiation levels caused by RF-EMF (5G together with 2G, 3G, 4G, and WiFi) will not be harmful for EU-citizens, especially infants, children and pregnant women, as well as the environment.
- 2) To recommend that all EU countries, especially their radiation safety agencies, follow Resolution 1815 and inform citizens, including, teachers and physicians, about health risks from RF-EMF radiation, how and why to avoid wireless communication, particularly in/near e.g., daycare centers, schools, homes, workplaces, hospitals and elderly care.
- 3) To appoint immediately, without industry influence, an EU task force of independent, truly impartial EMF-and-health scientists with no conflicts of interest¹ to re-evaluate the health risks and:
 - a) To decide about new, safe "maximum total exposure standards" for all wireless communication within EU.
 - b) To study the total and cumulative exposure affecting EU-citizens.
 - c) To create rules that will be prescribed/enforced within the EU about how to avoid exposure exceeding new EU "maximum total exposure standards" concerning all kinds of EMFs in order to protect citizens, especially infants, children and pregnant women.
- 4) To prevent the wireless/telecom industry through its lobbying organizations from persuading EU-officials to make decisions about further propagation of RF radiation including 5G in Europe.
- 5) To favor and implement wired digital telecommunication instead of wireless.

We expect an answer from you no later than **October 31, 2017** to the two first mentioned signatories about what measures you will take to protect the EU-inhabitants against RF-EMF and especially 5G radiation. This appeal and your response will be publicly available.

Respectfully submitted,

Rainer Nyberg, EdD, Professor Emeritus (Åbo Akademi), Vasa, Finland (NRNyberg@abo.fi)

Lennart Hardell, MD, PhD, Professor (assoc) Department of Oncology, Faculty of Medicine and Health, University Hospital, Örebro, Sweden (lennart.hardell@regionorebrolan.se)

WE will add signatories to the following list through the end of 2017. The updated list of signatories and the appeal can be found later [HERE](#).



¹ Avoid similar mistakes as when the Commission (2008/721/EC) appointed industry supportive members for SCENIHR, who submitted to EU a misleading SCENIHR report on health risks, giving telecom industry a clean bill to irradiate EU-citizens. The report is now quoted by radiation safety agencies in EU.

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Introduction to the United Nations EMF Appeal Delivered by Martin Blank, PhD, Department of Physiology and Cellular Biophysics, Columbia University.

I'm here with disturbing news about our favorite gadgets: cell phones, tablets, wi-fi, etc. Putting it bluntly, they are damaging the living cells in our bodies and killing many of us prematurely.

I'm Dr. Martin Blank, from the Department of Physiology and Cellular Biophysics at Columbia University. It is distressing for me, and more than 160 colleagues, who today are petitioning the United Nations requesting that they address this problem. We are scientists and engineers, and I am here to tell you – we have created something that is harming us, and it is getting out of control! Before Edison's lightbulb, there was very little electromagnetic radiation in our environment. The levels today are very many times higher than natural background levels and are growing rapidly because of all the new devices that emit this radiation. An example that a lot of us have in our pockets right now is the cell phone. One study shows that as cell phone usage has spread widely, the incidence of fatal brain cancer in younger people has more than tripled. We are putting cellular antennas on residential buildings, and on top of hospitals, where people are trying to get well. Wireless utility meters, and cell towers, are blanketing our neighborhoods with radiation. It's particularly frightening that radiation from our telecommunication and powerline technology is damaging the DNA in our cells. It is clear to many biologists that this can account for the rising cancer rates. Future generations – OUR CHILDREN – ARE AT RISK. These biologists and scientists are not being heard on the committees that set safety standards. The BIOLOGICAL facts are being ignored, and as a result, the safety limits are much too high. THEY ARE NOT PROTECTIVE! More protection will probably result from full disclosure of possible conflicts of interest between regulators and industry. Rising exposure to electromagnetic radiation is a GLOBAL problem. The World Health Organization and international standard setting bodies are not acting to protect the public's health and well-being. International exposure guidelines for electromagnetic fields must be strengthened to reflect the reality of their impact on our bodies, and in particular, on our DNA. Although we are still in the midst of a great technological transformation, the time to deal with the harmful biological and health effects is long overdue. We are really all part of a large biological experiment, without our informed consent. To protect our children, ourselves, and our ecosystem, we must reduce exposure by establishing more protective guidelines. And so, today, scientists from around the world are submitting an Appeal to the United Nations, its member states and the World Health Organization, to provide leadership in dealing with this emerging public health crisis. Details of The Appeal can be found at EMFScientist.org

NOTES FROM POWER WATCH DOCUMENTARY:

Professor Henry Lai, University of Washington, 30 years of research:

Two to three thousand studies confirm damage EMR does to body.

Governments setting EMR exposure levels on thermal effects is irresponsible, because large portions of science are thereby ignored.

Dr. Gerd Oberfeld, Public Health Dept. Salzburg, Austria:

Wants WiFi out of schools because of:
DNA damage
Cancer
Increased flu-like symptoms

Dr. Olle Johansson, Karolinska Institute:

He did research on EMR at lower levels than WiFi and found biological effects:

- Chromosome damage
- Impact on concentration capacity
- Decrease in short term memory
- Increase in cancer

Those who can't feel it - will they get cancer and other damage down the road?

The hypersensitive are a kind of walking antennas. If some people can feel WiFi, it should throw the standard limits out the window, and put a question mark on the WiFi revolution.

Countries are wrong to set limits on thermal effects, because that's just rubbish. There's great damage done at much lower rates.

Dr. Ian Gibson, MP, Norwich, North Carolina:

Government is not taking research on WiFi seriously. Industry rules in this area. 5-10 years from now, who knows what long-term exposures are going to show?

Switzerland, Italy, Russia, China: all have exposure levels thousands of times below ours.

Dr. Sarah Myhill, Researcher in England

- . 5G is a silent war against the human population. This is weaponized technology developed by the military.
- . Inflammation causes any pathology you care to name. WiFi causes inflammation. Inflammation interferes with the deliverance of energy to all cells. The body spends 1/3 of its energy on staying alive. We can't overspend. Or, if energy is interfered with, the results are fatigue and muscle pain, depression, anxiety.
- . EMF is a big problem for very few right now, but it's growing. Alzheimer's and dementia are now the top causes of death. Autism now affects 1 in 4. WiFi, which has been linked as a causal factor to all of these, will poison more and more people.
- . **Current WiFi is powered at 2.4 GHz broadcast frequency.** This level is when water molecules start to vibrate. They rotate, which permits calcium leakage and other damage to occur.
- . EMF (WiFi) frequencies have been used to cause:
 - . Passing out
 - . Heart arrhythmia
 - . Neurological problems
 - . Tingling
 - . Malaise
 - . Fatigue
 - . Paralysis

But 5G will use 60 GHz. This will affect oxygen molecule absorption. The molecules won't be able to bind to hemoglobin, which they need to be absorbed. This will cause people to have oxygen deprivation symptoms.

- . **5G will also affect the body's ability to produce Vitamin D.**

5G is going to cause all kinds of health issues.

Dr. Barrie Trower

EMF Researcher

Former British Intelligence Officer in charge of interviewing captured spies to find out what EMF weapons their countries were developing.

- . **40 countries' top scientists have warned about 5G.**
 - . It will interfere with body processes.
 - . It will be very close to an EMR weapon called Active Denial used for crowd control to create:

- . This is the same frequency used for crowd control: it can cause people to
 - . hear voices
 - . lose use of extremities
 - . induce strange illness
 - . pass out
- . England has banned WiFi from all classrooms for children under 18 years of age.
- . EMR opens the blood/brain barrier and lets in heavy metals. This causes many problems, including gluten intolerance.

Interview with Dr. Tom O'Bryan, speaker and workshop leader:
(Part of Alzheimer's and Dementia Summit series)

. "When you wear out microglia (immune cells in your brain) with constant gluten or WiFi, the microglia get worn out. The gut elevates antibodies that cause damage. These can get checked by a doctor. Autoimmunity biomarkers can be measured.

Olle Johansson, Professor in Stockholm, Sweden
Expert on Electromagnetic Fields (EMF)
(Part of Alzheimer's and Dementia Summit series)

- . Many EMF studies are being published every day. The last ten years of study have revealed:
 - . Loss of concentration
 - . Short term memory problems
 - . Cell function in decline
 - . Leakage of blood/brain barrier, which lets in heavy metals
 - . Cell death
 - . Behavior and sleep problems

. Mortality has increased. And Alzheimer's and dementia rates correlate to increases in Internet and cell towers.

"It's predicted in Swedish newspapers that more and younger people will get and die from Alzheimer's because of WiFi, along with other factors. But a high exposure to WiFi is a very big factor.

- . **Advice from the Wireless Safety Board in Sweden:**
 - . Keep your 'smart' phone away from your body
 - . Use it only as an emergency device. Otherwise, leave it off.
 - . Keep any conversations short.
 - . Use landline phones instead.

- . In a research study, boys exposed to WiFi did less well in learning tasks.
- . The WHO has put WiFi in the cancer classification, as causing brain tumors and childhood leukemia. They are clearly saying WiFi isn't safe.
- . "The wireless companies don't take responsibility for any kind of health effects. At a conference in London, a group of wireless and insurance companies said the question is not IF there is an effect on the brain, but only WHO WILL PAY FOR DAMAGE, because is won't be them."

EMFs and WiFi gadgets and toys:

- . They're not necessary
- . Green technologies are coming
- . Use human-friendly devices

From Dr. Joseph Mercola

Disinformation by Industry Threatens Public Health

Unfortunately, negative health effects from EMFs are usually not immediately noticeable, as the damage accrues over time, similar to that from smoking. It's important to note that researchers are in general agreement that there's a latency period of about 10 years or more before the damage shows up, which places children at greatest risk, since their exposures are earlier in life and longer.

There's no doubt in my mind that cellphones are one of the greatest public health threats of the 21st century. But, like the tobacco industry before it, the telecommunication industry has manipulated federal regulatory agencies, public health authorities and professionals through powerful and sophisticated lobbying efforts, leaving consumers confused about the health risks.

In an investigative report for *The Nation*, Mark Hertsgaard and Mark Dowie reveals "the disinformation campaign — and massive radiation increase — behind the 5G rollout."

By early 1999, findings from more than 50 studies were already raising "'serious questions' about cellphone safety," and this evidence was shared with the CTIA[®] (the trade association for the wireless industry) board of directors. They ignored it, and have consistently fought to prevent public discussion and knowledge about the possible effects.

5G Rollout Will Significantly Magnify Health Risks

The industry touts 5G, the "5th Generation" wireless network, as a way to create faster internet and streaming services, and better cellphone coverage. The problem is that 5G relies primarily on the bandwidth of the millimeter wave (MMW), which is known to penetrate 1 to 2 millimeters of human skin tissue⁹ and has been linked to numerous health problems, including:¹⁰

- Eye problems such as lens opacity in rats, which is linked to the production of cataracts

Solution: Minimize exposure to environmental toxins and EMFs —

In terms of air pollution, it's worth remembering that your indoor air is often five times more polluted than outdoor air, and indoors, it's something you can control, using a high-quality air purifier. Pesticides can be avoided by eating certified organic foods.

Non-native EMFs contribute to Alzheimer's by poisoning your mitochondria, and this is not limited to living in close proximity to power lines. It also includes electromagnetic interference from the electric grid and microwave radiation from your cellphone, cellphone towers, Wi-Fi and more.

Radiation from cellphones and other wireless technologies trigger excessive production of peroxynitrites,³³ a highly damaging reactive nitrogen species. Increased peroxynitrites from cellphone exposure will damage your mitochondria,^{34,35} and your brain is the most mitochondrial-dense organ in your body. To learn more about the mechanisms that place your health in jeopardy, and what you can do about it, see "[Top 19 Tips to Reduce Your EMF Exposure.](#)"



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Effects of 5G Radiation on the Human Body

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Abstract: Fifth generation mobile communication (5G) studies are starting to gain real momentum as we point toward the year 2020. The first 5G networks will be supporting traffic volumes more than 1,000 times higher than today with data rates up to multi-Gbps for specific scenarios. The preliminary frequency bands identified are between 6-100 GHz. This paper intends to study the effects of these frequencies on the human body since most of the 5G devices will be worn on the body. So the biocompatibility of these devices is an important issue. This paper focuses on the recent results and advances related to different aspects of interactions of 6-100 GHz frequency with the human body.

Keywords: UMTS, CPICH, EMF,

I. INTRODUCTION

In just a decade, the amount of IP data handled by wireless networks will have increased by well over a factor of 100: from under 3 Exabytes in 2010 to over 190 Exabytes by 2018, on pace to exceed 500 Exabytes by 2020. This deluge of data has been driven mainly by video thus far, but new unforeseen applications can reasonably be expected to materialize by 2020. In addition to the sheer volume of data, the number of devices and the data rates will continue to grow exponentially. The number of devices could reach the tens or even hundreds of billions by the time 5G comes to fruition, due to many new applications beyond personal communications.

The four consecutive generations of mobile communication systems have been designed for increasing the spectral efficiency as well as peak data rate. In the fifth generation, it is foreseen that other criteria such as latency, energy efficiency or EM radiation exposure will also have an important role in the design of such communication systems. The next generation will also bring some new concepts to mobile communications such as heterogeneous layout or coordinated multipoint (CoMP) communication, which will have an impact (good or bad) on the EM radiation exposure. With the growing usage of mobile communication devices by the public over longer period of times, the concerns about adverse health effects of EM radiation exposure, from mobile communication systems in particular are rapidly increasing, which brings about the need to investigate techniques for reducing EM radiation from such systems. Moreover, very few research works have explicitly focused on reducing the EM emission levels of wireless communication systems. It has been shown that using lower frequency bands in universal mobile telecommunication systems (UMTS) can reduce the EM radiation density of a BS by about 13 dB and the transmit power of the primary common pilot channel (CPICH) by about 16 dB. As there is a direct relationship between transmit power, SAR and EM radiation exposure, some wireless communication techniques that have proven to reduce the SAR and/or transmit power of mobile communication systems, and hence, EM radiation exposure levels.

II. INTERACTION OF 60 GHz FREQUENCY WITH THE HUMAN BODY

The primary biological targets of 60-GHz radiations are the skin and eyes. Exposure of the eyes leads to the absorption of the EM energy by the cornea characterized by a free water content of 75% and a thickness of 0.5 mm. Ocular lesions have been found after high-intensity exposure of an eye (3 W/cm², 6 min) [1]. However, studies performed at 60 GHz (10 mW/cm², 8 h) demonstrated no detectable physiological modifications [2], indicating that EM waves act on the cornea in a dose-dependent manner. Hereafter, we will essentially consider the interactions with the skin as it covers 95% of the human body surface. From the EM viewpoint, the skin can be considered as an anisotropic multilayer dispersive structure made of three different layers, namely, epidermis, dermis, and subcutaneous fat layer (Fig. 1). The skin also contains capillaries and nerve endings. It is mainly composed of 65.3% of free water, 24.6% of proteins, and 9.4% of lipids [3].

The permittivity data and temperature levels available at 60 GHz are summarized in table 1 from room and body temperatures.

Reference	ϵ	T(Celsius)	Method	Sample type
Gabriel[4]	7.98 - j 10.9	37	E	In vivo
Gandhi[5]	8.89 - j 13.15	37	E	In vitro

Martin Pall, Ph.D., professor emeritus at Washington State University, is another one of the scientists who signed the petition. [He discovered more than two dozen bodies of research](#) asserting that EMFs work by activating voltage-gated calcium channels (VGCCs), which are located in the outer membrane of your cells.

Once activated, they allow a tremendous influx of calcium into the cell — about 1 million calcium ions per second per VGCC. When there's excess calcium in the cell, it increases levels of both nitric oxide (NO) and superoxide. While NO has many beneficial health effects, massively excessive amounts of it react with superoxide, forming peroxynitrite, which is an extremely potent oxidant stressor.

Peroxyntirites, in turn, break down to form reactive free radicals, both reactive nitrogen species and reactive oxygen species, including hydroxyl radicals, carbonate radicals and NO₂ radicals — all three of which do damage. Peroxyntirites also do their own damage.

EMFs are not, therefore, causing damage by having a thermal influence or heating your tissues; they are not "cooking" your cells as some suggest. Rather, [EMF radiation](#) activates the VGCCs in the outer cell membrane, triggering a chain reaction of devastating events that, ultimately:

- Decimates your mitochondrial function, cell membranes and cellular proteins
- Causes severe cellular damage
- Results in DNA breaks
- Dramatically accelerates your aging process
- Puts you at higher risk for chronic disease

Like Moskowitz, Pall believes consequences of chronic EMF exposure to the brain can include neurological changes leading to [anxiety](#), [depression](#), [autism](#) and [Alzheimer's disease](#).¹⁰ Further, it's known that elevated VGCC activity in certain parts of the brain produces a variety of neuropsychiatric effects. According to Pall:

"I reviewed a [large number] of studies on various kinds of EMF exposures, each of them showing neuropsychiatric effects. What you find is that these effects have been repeated many times in these epidemiological studies.

It's the same thing that everybody's complaining about, 'I'm tired all the time,' 'I can't sleep,' 'I can't concentrate,' 'I'm depressed,' 'I'm anxious all the time,' 'My memory doesn't work well anymore.' All the things everybody's complaining about.

We know all those things are caused by EMF exposures. There's no doubt about that. Because we know their effects on the brain, we know that the VGCCs' excessive activity can produce various neuropsychiatric problems."

New paper on risks to children of radiation from digital technologies GR3C, University College Cork, Feb 27, 2019

Professor Tom Butler of University College Cork in Ireland published a new working paper on the risks that mobile digital technologies present to children, titled:

“On the Clear Evidence of the Risks to Children from Smartphone and WiFi Radio Frequency Radiation.”

See the link below. This paper is an in-depth review of independent peer-reviewed research. The findings are thought-provoking and alarming for parents and guardians of children and adolescents.

Butler, T. “On the Clear Evidence of the Risks to Children from Smartphone and WiFi Radio Frequency Radiation.” Working paper. University College Cork, Ireland. undated.

Abstract:

Children’s health and well-being is under significant threat from everyday digital technologies, as the past 15 years have seen the proliferation of microwave Radio Frequency Radiation (RFR) devices in the home, school and society. The safety standards for such devices—smartphones, tablets etc.—were based on the proven thermal or heating effects of microwave devices in adults, not children. Scientists in the life sciences have long been aware of equally harmful non-thermal effects. However, physicists and engineers have operated on the theory that non-ionizing RFR could not directly damage human DNA and lead to cancer, as it was far less powerful than ionizing radiation (x-rays, nuclear etc.). That theory has been solidly and roundly refuted, as this paper illustrates. Cancer risks aside, research studies have demonstrated that low-intensity RFR elicits a range of pathophysiological conditions in experimental animals and humans. This is why parents, educators and governments should be alarmed and take immediate and appropriate action. In an Irish, and indeed international context, there is clear ignorance on such matters. In response, this paper aims to inform by presenting clear evidence, in a balanced manner, of the risks to children based on proven scientific theories and empirical evidence. The paper concludes by offering practical advice on how the risks to children, and indeed adults, can be minimized.

THE FIRST REPORTED INJURY OF 5G COMES FROM SWITZERLAND

The first reported injury of 5G in a news report comes from Switzerland, where 5G has been launched in **102 locations**. The weekly French-language Swiss magazine L'illustré interviewed people living in Geneva after the 5G rollout with alarming details of illness. In their article, **With 5G, We Feel Like Guinea Pigs**, posted July 18, 2019, they report neighbors met to discuss their many common symptoms and many unanswered questions.

5G: Its Legal but Not Safe

As soon as the antennas were installed, several residents and entire families in the heart of Geneva reported similar unusual symptoms of loud ringing in the ear, intense headaches, unbearable earaches, insomnia, chest pain, fatigue and not feeling well in the house. 29-year-old Geneva resident, Johan Perruchoud, called up Swisscom and was told that indeed the 5G cell towers were activated on the same day he began to feel the symptoms. When others called Swisscom they were told everything is legal and within guidelines.

Swiss Physician Denounces 5G and Calls for a 5G Moratorium

Dr. Bertrand Buchs, who has also called for a 5G moratorium, states he has seen more and more patients with similar symptoms. He notes, "In this case, our authorities are going against common sense ... we risk experiencing a catastrophe in a few years... no serious study exists yet, which is not surprising when we know that this technology was developed in China, then to the United States. In Switzerland, we could open a line for people who feel bad, listen to these complaints and examine them. Our country has the means and the skills. The debate must be launched because the story is not about to end."

Swisscom: Millions of Fast

Many Others Suffer Microwave Illness/Electrosensitivity

It is reported that 3% to 30% of the population have symptoms similar to Microwave illness or electrosensitivity, depending on the country and if mild to severe symptoms are reported.

Dr. Scott Eberle describes how a physician learned about his own electrosensitivity published originally in 2014 in the Sonoma Medicine and later reprinted in the Santa Clara County/Monterey County Medical Association Bulletin. You can read Dr. Scott Eberle's [What's the Diagnosis, Doctor?](#) He has also written "[An Underworld Journey: Learning to Cope with Electromagnetic Hypersensitivity.](#)" Dr. Scott Eberle.

Ecopsychology.9(2):106-111, June

2017. https://www.researchgate.net/publication/317923126_An_Underworld_Journey_Learning_to_Cope_with_Electromagnetic_Hypersensitivity

Writer **Alison Main** has documented her experience in developing electrosensitivity and her frustration at being more isolated from other people and wireless technology she would like to use. [Electrosensitivity: When the Modern World Hurts](#)

See Also

- **PST 5G Scientific Literature:** <https://mdsafetech.org/5g-telecommunications-science/>
- **PST Electrosensitivity Stories.** <https://mdsafetech.org/electrosensitivity-stories/>
- **PST Electrosensitivity Science.** <https://mdsafetech.org/science/es-science/>
- **PST Review of Electrosensitivity:**
 - [Part 1 Overview](#)
 - [Part 2 Relevant Scientific Evidence](#)
 - [Part 3 A Clinical Approach to EHS](#)
- **PST Scientific Literature on Cellular and Biological Mechanisms of Wireless Radiofrequency Radiation.** <https://mdsafetech.org/cellular-mechanisms-oxidation/>

diagnosis and treatment of EMF-related health problems and illnesses gives an “overview of the current knowledge regarding EMF-related health risks and provides recommendations for the diagnosis, treatment and accessibility measures of EHS to improve and restore individual health outcomes as well as for the development of strategies for prevention or <https://www.degruyter.com/view/j/reveh.ahead-of-print/reveh-2016-0011/reveh-2016-0011.xml?format=INT> or **EMF Guidelines**

- **‘Are community concerns over the 5G network rollout based on unfounded anxiety or valid evidence?’** Guest Blog from Dr. Don Maisch, Australia. Between a Rock and a Hard place. April 25, 2019. <https://betweenrockandhardplace.wordpress.com/2019/04/25/guest-blog-from-dr-don-maisch-australia-are-community-concerns-over-the-5g-network-rollout-based-on-unfounded-anxiety-or-valid-evidence/>
- **The Prevalence of People With Restricted Access to Work in Man-Made Electromagnetic Environments.** Bevington M. Journal of Environment and Health Science. January 18, 2019. <https://www.ommegaonline.org/article-details/The-Prevalence-of-People-With-Restricted-Access-to-Work-in-Man-Made-Electromagnetic-Environments/2402>
- **Prevalence of self-reported hypersensitivity to electric or magnetic fields in a population-based questionnaire survey.** Hillert L et al. Scand J Work Environ Health. 2002 Feb;28(1):33-41. <https://www.ncbi.nlm.nih.gov/pubmed/11871850>
- **Changes of Clinically Important Neurotransmitters Under the Influence of Modulated RF Fields- A Long-term Study Under Real-life Conditions.** (2011) Buchner K and Eger H. <https://ecfsapi.fcc.gov/file/7521095891.pdf>
- **Research articles by Dr. Horst Eger.** https://www.researchgate.net/scientific-contributions/2014064959_Horst_Eger

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SONOMA CLEAN POWER REPORT

Lead Locally (CEC Grant)

The Lead Locally Research Team is monitoring the baseline usage for all Phase 1 pilot homes. Phase 1 is a study of emerging technologies for home use. The products are not yet market ready and this study will create the documentation necessary to determine if the items are viable for our climate zone. SCP has begun recruitment for 50 additional sites for the Phase 2 Technology Demonstration study on market ready technologies such as; daylighting retrofits and phase change materials for commercial properties, night ventilation, induction cooktops, and economizers for residential homes. The Phase 2 study will help determine the best strategies for deployment of the technologies at our Advanced Energy Center.

An open recruitment and application for manufacturers and distributors to display and deploy emerging technologies at the Advanced Energy Center is publicly available until the opening of the Center. This application can be found via the SCP website.

EVERGREEN outreach to SCP member jurisdictions

Prior to June 19, the City of Sonoma had been the only local government that had registered all of its municipal accounts for EverGreen service. In the last month on June 6, the Town of Windsor contacted SCP staff and requested certain key municipal accounts be upgraded to EverGreen. On June 25, the City Council of Cotati voted unanimously to convert all of their accounts to EverGreen. On July 16, the City of Sebastopol voted to convert all of their accounts to Evergreen and the County of Sonoma recently included funds to go toward EverGreen premiums in its adopted budget for a large portion of their accounts. The City of Santa Rosa held a Climate Subcommittee meeting to formally discuss transitioning their municipal accounts over to EverGreen service.

approve adoption of customer electric generation rates starting September 1, 2019 with 2.0% savings for all rate classes.

By increasing customer rate savings to 2.0%, the roughly \$10 million in reduced expenses would be shared approximately equally between additional rate savings and additional reserves. In addition, it is likely that SCP can sustain a 1% savings through 2020, and perhaps a slightly higher level of savings, supporting SCP's goal of rate stability. Staff recommends rates that provide 2.0% savings on total electric charges relative to the distribution utility's adopted July 1, 2019 rates.

All dollar amounts are in \$ millions

Total Bill Savings	Customer Savings on Total Bill	Customer Programs	Capital Investments	Change in Program Reserves	Change in Operating Reserves	Change in Collateral Reserves
1.0%	\$5.0	\$12.4	\$8.7	\$3.3	\$16.6	\$2.2
2.0%	\$10.0	\$12.4	\$8.7	\$2.6	\$12.9	\$1.7

“E-TOU-C” rate at the end of the pilot. PG&E and Calpine worked together on bill messaging, bill protection credits, and other operational items that resulted in a smooth customer experience. SCP’s pilot results show that of the 6,968 SCP customers that took service on E-TOU-C during the pilot, 5,382 saved money on the rate. In total, those customers saved \$85,684, meanwhile SCP paid \$12,888 in bill protection. SCP saw no change in opt-out rates due to the Pilot.

Discussion:

Full Default TOU Transition Next Steps:

In April, Staff explained to the Board that the Commission and PG&E have asked the CCAs to make two decisions by October 2019:

1) Will the CCA transition its residential E-1 customers to the new Time-of- Use (Peak Pricing 4-9 p.m. Every Day)?

2) Will the CCA offer bill protection to its customers, in a manner similar to PG&E?

LEGISLATIVE REPORT

Wildlife

There has been a lot of recent activity in Sacramento pertaining to energy. On July 5, Assembly Member Holden introduced broad wildfire liability legislation (AB 1054) and it swiftly made its way through the process to get signed into law just seven days later. The bill is a giant, complex grand bargain to create a \$21 billion insurance fund, financed primarily by ratepayers, but with significant upfront shareholder contributions. The fund is designed to quickly assist wildfire victims, and forms a number of new public agencies to oversee pooled catastrophe insurance, wildfire electric utility safety certification, criteria and judgments on wildfire cost recovery from ratepayers and related topics. The bill significantly increases the CPUC’s powers to determine where to allow ratepayer funds to pay for utility wildfire damage and even to oversee municipal power agencies disaster plans for the first time. Some of the more complex issues to evaluate in the law include dozens of rule changes at the CPUC that allow faster decision making, increased use of closed-door decision making meetings, limiting the actions the CPUC can take on the basis of public comment and expanding the use of intervenor compensation for groups like TURN. Taxpayers are also potentially impacted as well because the initial insurance fund will be funded from the State’s general fund as a loan.

In less than a week, the Legislature heard and passed AB 110 (Ting), AB 111 (Committee on Budget), and AB 1054 (Holden) out of both houses and sent them to the Governor for his signature. Governor Newsom signed all three bills on July 12th.

AB 110 (Ting) -- Amends the 2019 Budget to provide resources associated with wildfires, reflected in SB 111. These resources are associated with the Department of Finance’s role in the implementation of the wildfire policy bill, AB 1054.

on their website. Assemblyman O'Donnell accepted the amendment. When the Legislature returns on August 12th, AB 1362 will be amended with the following language:

Section 365.3. (a) The commission shall post, in a consolidated location on its internet website, each load-serving entities' residential electric rate tariffs and programs to enable customers and local governments to compare rates, services, environmental attributes, and other offerings. The documents posted shall include, but not be limited to, joint comparison rates for each of the community choice aggregators and investor-owned utilities and the disclosures required of retail sellers pursuant to Sections 398.4 and 398.5. This information shall also be available and easily accessible on the load-serving entities internet websites.

AB 1424 (Berman) – Electric Vehicle Charging Stations

Board Action: Support

Location: Senate Appropriations Committee

AB 1424 will assist California with meeting its electric vehicle (EV) charging station deployment goals by ensuring EV charging station payment methods are technology neutral. The Air Resources Board (ARB) adopted regulations in June to mandate all publicly available charging stations to be outfitted with Euro Mastercard Visa (EMV) credit card readers. Unfortunately, the regulations are not technology neutral and do not allow for other viable and more secure credit card reader technologies that currently exist and are becoming increasingly prominent. AB 1424 will create a technology neutral payment standard without sacrificing consumer access to stations.

SB 155 (Bradford) – Integrated Resource Plan

Prior Board Action: Oppose as amended May 1, 2019

Staff Recommendation: Neutral with Amendment

Hearing: Assembly Appropriations Committee

SB 155 was heard on July 8th in the Assembly Natural Resources Committee where it was amended to resolve CCA concerns that the CPUC would act on the authority granted by SB 155 to order CCAs to procure specific resources. Thus, taking procurement decisions out of the hands of the CCA board of directors. The committee understood the CCAs concerns that the IRP is a planning document and not a procurement compliance plan. When the Legislature returns on August 12th, SB 155 will be amended with the following language:

Section 454.54 (a) In addition to the requirements of Section 454.52, the commission shall enforce the requirement, that the integrated resource plan of each load-serving entity shall contribute to a diverse and balanced portfolio of resources needed to ensure a reliable electricity supply that provides optimal integration of renewable energy resources in a cost-effective manner, meets the

SB 520 (Hertzberg) – Provider of Last Resort

Board Action: Allow to Negotiate

Hearing: Assembly Appropriations Committee

SB 520 authorizes the CPUC to develop threshold attributes for load serving entities to serve as a “provider of last resort” or POLR. The amendments taken on June 27 were technical in nature and did not improve the provisions that would enable the CCAs to become the provider of last resort.

From: [O'Neal, Chantell](mailto:O'Neal.Chantell)
To: [O'Neal, Chantell](mailto:O'Neal.Chantell)
Subject: FW: The Physics and Biophysics of Electromagnetic Radiation
Date: Thursday, September 12, 2019 8:43:55 AM

From: Helen Sears [<mailto:polliwog45@yahoo.com>]
Sent: Wednesday, September 11, 2019 12:23 PM
To: Miller, Tabatha <TMiller@fortbragg.com>
Subject: The Physics and Biophysics of Electromagnetic Radiation

Dear Ms. Miller,

This is basically a Fact Sheet about electromagnetic radiation, and explains why even 4G and below radiation is harmful to living tissue.

5G will exacerbate damage much more, because it's so much stronger - 10 to 100 times, depending on what's installed at the base stations. It's so strong researchers are saying it will be like living inside an airport scanner 24/7.

I understand that legal precedent basically ties the hands of deciders to favor wireless companies. They've paid out billions to ensure that. But I'm writing to urge you to keep in mind the Precautionary Principle that Mendocino County has adopted. The Principle was written by Dr. William Stewart, the science researcher to Queen Elizabeth, and states that cell towers and antennas should be kept away from schools and from homes where children live.

If there is any way we could keep things as they are now, and have fiber optics installed instead where additional coverage is needed, it would save great harm from being done.

Thank you for anything you can do.

Helen Sears
Mendocino, CA 95460

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Many organizations/sites sharing warnings about the wireless health threat have names like 'such-and-such for responsible technology.' Or 'safe technology.' Or 'safer.' This article suggests that the physics and biophysics indicate that all such and similar names are deceptions.

Maybe it's not all controlled opposition, but wittingly or not, these entities flirt with terminal disaster by perpetuating the threat. They suggest we dance with the 2G-4G devil, but 'OMG,' 5G must go! The physics/biophysics are unforgiving, however. 2G-4G is a quite sufficiently terminal nightmare. If we can relinquish 2G-4G, 5G will collapse. If we can't, let 5G develop, it will mercifully shorten the coming agony.

THE PHYSICS

As the name implies (artificial) electromagnetic radiation (EMR) used in wireless systems has electric and magnetic components. It's commonly described by wavelength and frequency.

Wavelength is the distance in meters between where the shape of the wave starts and where it begins to repeat. Frequency is how often the shape repeats. It's measured in cycles per second, or "hertz" (Hz). One Hz is one repetition, or cycle, per second.

Wireless systems use microwave EMR, "micro" meaning short. Definitions vary, but it's generally considered to have wavelengths between 1 meter and 1 millimeter, with frequencies from millions of hertz (MHz) to billions (GHz): 300MHz to 300GHz.

Cellular frequencies, commonly 700MHz to 2.5GHz (WiFi 5GHz also) provide for large amounts of data at speed. Transmitted waves are called "carrier" frequencies, because frequency changes are added to the wave, creating signal pulses. These contain the data.

The first mobile phones (1983-4) were 'analog' - the real shape of the wave going from transmitter to receiver. Using pulsed digital frequencies, 2G was introduced in the US in 1992-3. Health issues arose shortly thereafter.

Beginning in the 1950's, pulsed microwave was tested in military stealth-weapon research. Specific pulse rates were found to induce specific diseases. The pathological effects were also well understood in the scientific community by the mid-1970's. Many thousands of studies now exist.

With knowledge of harm in place, then, weapon technology was adapted virtually unchanged to 2G mobile telecom, except that weapons emit much less power than towers, cell phones and WiFi, and that the latter radiations are randomly pulsed by data packets.

"Physics-speaking," it comes down to this: For bandwidth and speed, digital microwave is needed. For data itself, pulsing is needed.

THE BIO-PHYSICS

Life forms are highly susceptible to artificial electromagnetic fields (EMFs) because life forms produce and operate on minute levels of natural electromagnetics.

The FCC radiation exposure limit (thermal/tissue heating) is expressed in milliwatts (mW, a thousandth of a watt) per square centimeter. As of this writing, it's .2 mW/cm². Two tenths of a thousandth of a watt.

The non-thermal exposure limit suggested after review of existing science, collated and summarized in the 2007 BioInitiative Report (BR, 2000 studies), was one tenth of a microwatt (μ W, a millionth of a watt) per square centimeter - .1 μ W/cm². By 2012 BR (1800 additional studies and updated in 2019) it became 0.003 μ W/cm² to 0.006 μ W/cm².

Thus, the FCC thermal limit - 200 μ W/cm² - is about 670,000 times higher than the lower BR non-thermal limit. The point, however, is that below heating, and at all non-thermal levels, transmitted power is virtually irrelevant.

NOTE: The BR calls in vain for "...a biologically-based public exposure standard..." It's cited here only to demonstrate the existence of independent science FCC say doesn't exist or is "inconclusive."

So, pulsed microwave somewhere between one tenth of one millionth of a watt and three thousandths of one millionth of a watt has harmful effect. Such figures indicate the sensitivity of biological systems. Also, with 2G-4G wavelengths, the square

centimeter is a 'tube' going through your body (billions of cells).

Transport channels in cell membranes react defensively to non-thermal 2G-4G pulse frequencies, and will shut down. A special channels called "Voltage Gated Calcium Channel" is controlled by the membrane's "voltage sensor." Pulsed EMR disrupts it and excess calcium flows in, creating a severe imbalance. Since any body cell is susceptible in both cases, the range of potential effects is impressive.

Pulses must exist at all power levels for data, including 'biologically based' exposure limits called for by many 'concerned' scientists. The FCC lie about thermal-only harm that underlies its "exposure limit" avoids the pulsing issue. The term for this is scientific fraud.

CUMULATIVE EFFECTS

Like sensitivity, this is absolutely critical. Felt or not, effects can occur any time during or after exposure (there's normally no escape) and build up over time. Using animals with short life spans, scientists have 'guesstimated' the ultimate termination of human reproduction in a few generations.

Some scientists say more research is needed. Academically perhaps. Scientifically speaking, sanity prevailing, however, only one repeatable study showing harm was sufficient to have said, "Wait" originally. Also, without a moratorium (right!), 2G-4G effects bio-accumulate. Meanwhile, the existing sinister violation of the Nuremberg Code—informed consent to be experimented on—will persist. Meanwhile also, torture of lab animals will continue.

*"Scientists at the end of WWII were hanged for what scientists are doing today and getting away with."— physicist Barrie Trower, PhD, microwave expert***TJ**

TRENDPOST

"Biophysics-speaking," it comes down to this: The combination of extreme sensitivity and cumulative effect means there can be no safe wireless technology. Now, if you could find a power level at which pulsing and voltage influence had no effect — forever, for all life — power would be too low for the system to function.

"I ask for any scientist(s) from industry / government to 'humiliate' me live 'on-air' with their expert knowledge by answering one question: 'What is the safe level of microwave irradiation for the ovarian follicles during the first

100 days development of the embryo?” — Barrie Trower, PhD, Wi-Fi – A Thalidomide in the Making. Who Cares?

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-
-
-



From: [O'Neal, Chantell](mailto:O'Neal.Chantell)
To: [O'Neal, Chantell](mailto:O'Neal.Chantell)
Subject: FW: Please remove today's 3B item about guidelines wireless from agenda
Date: Monday, September 16, 2019 10:05:22 AM

-----Original Message-----

From: Annemarie [<mailto:aweibel@mcn.org>]
Sent: Wednesday, September 11, 2019 2:01 PM
To: O'Neal, Chantell <COneal@fortbragg.com>; Miller, Tabatha <TMiller@fortbragg.com>; Lee, Will <Wlee@fortbragg.com>; Jessica Ballard <jessiballa7@aol.com>; Varga, Tom <TVarga@fortbragg.com>; Lemos, June <JLemos@fortbragg.com>
Subject: Please remove today's 3B item about guidelines wireless from agenda

Hi,

Please postpone as the public is not notified about this meeting. No place to sign up to receive info about wireless, meeting time not ok for people who work, City staff & committees have no training about wireless, neither does the public. I asked 3 times for the city to bring an expert here. Info submitted at the 8-12 meeting did not get transferred to this meeting. There are other ways to deal with the pressure from the outside, not just guidelines about aesthetics. Please post to comments on agenda with info from agenda city council from 8-12.

Annemarie Weibel

From: Pamela Sandberg [<mailto:myvoice@oneclickpolitics.com>]

Sent: Friday, September 6, 2019 9:27 AM

To: Miller, Tabatha <TMiller@fortbragg.com>

Subject: We don't want 5G!

Re: We don't want 5G!

Dear Ms. Miller,

You are my elected representative. This legal notice of liability is designed to be used as evidence in court if needed and intends to enlighten you and to protect you from attracting civil and criminal liability in relation to your actions and/or omissions surrounding the deployment of 5G technology within your constituency. 4G/LTE small cells form an integral part of the 5G deployment. This 5G technology will cause me to be exposed to wireless non-ionizing electromagnetic radiation against my consent and in my home.

Contamination of my home with 5G may cause damage to my home if it becomes a health risk to me and thus render my home uninhabitable. Irradiating me with wireless non-ionizing electromagnetic radiation against my consent would be an application of force against my person and which causes fear of bodily injury and could be classed as a civil trespass and/or a criminal assault.

Any level of exposure of man-made non-ionizing electromagnetic radiation can be diagnosed by my medical practitioner as an adverse health effect pursuant to the WHO's International Classification of Diseases ICD-10, code W90 thus rendering any safety limit as set by the government safety standards obsolete as to protecting my health. As needed, I may see my doctor for advice on the 5G issue.

If 5G technology is deployed within your constituency, I expect that you as my elected representative will exercise due diligence to certify that all parties deploying 5G technologies have sufficient insurance cover to compensate for damage or harm caused by the emission of wireless non-ionizing electromagnetic radiation. Please note that this could be a problem, since underwriters such as Lloyds of London do not insure for such harm and damage.

I urge you, as my elected official, to act in the public interest by addressing the potential cumulative harms of densification (the crowding of small cells into a limited area to enable 5G) and insisting that public safety regulatory authorities need to prove that such densification of 5G technology is safe and that any deployment of 5G, Artificial Intelligence (AI), and/or the Internet of Things (IoT), is regulated appropriately to ensure that the national security and the safety and privacy of the public and myself is not compromised.

You need to protect the public from other harmful wireless technologies such as Wi-Fi in schools, "smart" meters on dwellings, and the like, and to replace those technologies with safe and efficient wired technologies, such as Ethernet and/or fiber optics, as the end-nodes of

internet delivery systems to dwellings, schools and commercial buildings. Forward-thinking cities are already doing this.

I implore you, as my elected official, to act in the public interest by protecting the public and myself from being persecuted by the passing of laws that restrict the Courts, law enforcement agencies, municipal councils and local governments from taking action to protect the public from harm to health and damage, caused by 5G and other wireless technologies.

I am genuinely concerned for your welfare, the general public and mine, and this is a situation of the utmost urgency. I have studied the relevant facts and am thus aware of the danger. As a result I am in fear and I take the risk of harm and damage to me very seriously.

To help bring you up to speed on this extremely important topic, please go to the5Gsummit.com, and listen for free to what 40 highly regarded experts inclusive of scientists, medical practitioners and lawyers from around the world have to say on the 5G subject. Experts who are not censored by the telecommunications industry, nor their captured governments, nor the captured media. Further, to assist with your education, please look at the Bio-initiative Report 2012 (updated 2017) - A Rationale for Biologically-based Public Exposure Standards for Electromagnetic Fields (ELF and RF) bioinitiative.org and Physicians for Safe Technology – 5G Mobile Communications mdsafetech.org.

I implore you as my civic leader, and as my elected representative to get educated on this important topic, and show me by your decisions, actions and omissions that you are taking precautionary steps to address the risk of harm to me and all the people within your constituency.

As an elected official I believe you are at risk of being liable if you do not take appropriate action to attempt to abate, or prevent such harm to me or the public.

Your people are rising up and I implore you to take leadership and be a champion for the health and safety of all of us. If you do, many voters, legislators and I will wholeheartedly support and campaign for you.

Sincerely,
Pamela Sandberg
pamwillsurf@yahoo.com

32800 Sutliff Ln
Fort Bragg, CA 95437
Constituent

Lemos, June

From: Annemarie <aweibel@mcn.org>
Sent: Wednesday, September 11, 2019 2:01 PM
To: O'Neal, Chantell; Miller, Tabatha; Lee, Will; Jessica Ballard; Varga, Tom; Lemos, June
Subject: Please remove today's 3B item about guidelines wireless from agenda

Hi,

Please postpone as the public is not notified about this meeting. No place to sign up to receive info about wireless, meeting time not ok for people who work, City staff & committees have no training about wireless, neither does the public. I asked 3 times for the city to bring an expert here. Info submitted at the 8-12 meeting did not get transferred to this meeting. There are other ways to deal with the pressure from the outside, not just guidelines about aesthetics. Please post to comments on agenda with info from agenda city council from 8-12.

Annemarie Weibel

AT&T's Comments on Fort Bragg, CA's Aesthetic Guidelines, Permit Guidelines and Permit Conditions for Wireless Telecommunications Facilities

Overview

- AT&T appreciates the City updating its wireless regulations given recent developments in technology and applicable laws.
- With more than 72% of American households relying exclusively or primarily on wireless communications, and 70% of 911 calls made from cell phones, it is especially important to encourage responsible wireless deployments consistent with applicable law.

Important Legal Concepts

- The Federal Telecommunications Act of 1996 (“Act”) establishes key limitations on local regulations. Under the Act, the City must not prohibit or effectively prohibit wireless services.
- AT&T has a franchise right to place facilities in the public rights-of-way, so long as it does not incommode the public use of the public way.¹
- The FCC’s *Infrastructure Order* established an aesthetic standard for small cells. To be lawful, aesthetic rules must be (1) reasonable, (2) no more burdensome than those applied to other infrastructure deployments, and (3) objective and published in advance.²

Comments on the City’s Aesthetic Guidelines and Permit Conditions

- Location Requirements. The Aesthetic Guidelines establish location preferences that may be improper. The City must avoid discriminatory or prohibitory requirements. If location preferences materially inhibit AT&T from serving customers, they violate the Act as an effective prohibition.
- Undergrounding. Undergrounding requirements must be revised to avoid unlawful discrimination or effectively prohibiting wireless services in violation of the Act.
- Installation Timing. The City requires installation and construction to be completed within 30 days. Because construction can be impacted by numerous variables, some of which are uncontrollable, the City should instead require construction to begin within 90 days and that the applicant work diligently to completion.
- Pole Height Limits. Section 3(T) says that pole heights cannot exceed zoning district height limits. To avoid effectively prohibiting wireless services, the City should add flexibility with respect to height requirements, particularly for concealed facilities.

¹ See California Public Utilities Code Section 7901.

² See *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*, Declaratory Ruling and Third Report and Order, FCC 18-133 (September 27, 2018) (“*Infrastructure Order*”) at ¶ 50.

- Ground-Mounted Electric Meters. Section 3(N) aims to prohibit “separate ground-mounted electric meter pedestals.” The City should revise this provision to state a preference subject to technical feasibility because sometimes ground-mounted electric meter pedestals are the only feasible option based on the electric provider’s requirements.
- Separation. The City should delete its 500-foot separation preference under Section 4(H). This is discriminatory and runs a substantial risk of effectively prohibiting wireless services. Moreover, separation is not justified for concealed sites.
- Side-Mounted Antennas. Prohibiting side-mounted antennas, as the City seeks to do, may unlawfully discriminate against wireless installations and ban certain technologies.
- Height of Small Cells. Sections 5(D) and 6(C) limit top-mounted antennas to 48 inches above pole top. This will harm aesthetics by preventing deployment of stealthy facilities. For example, AT&T’s typical streetlight-top design extends up to six feet above the pole.
- Number of Equipment Shrouds. Section 5(F) allows only one equipment shroud per pole. This is unreasonable, discriminatory and risks prohibiting wireless services.
- Subjective Standards. The City’s design guidelines contain multiple subjective aesthetic standards that cannot be the basis for denial for small cell applications. For example, Section 3(A) says that facilities must be designed to be as “visually unobtrusive as possible,” and shall “minimize visual clutter.” The City needs to develop objective criteria to comply with the FCC’s aesthetic standard for small cells.
- Accessory Equipment Volume. Section 3(H) limits the volume of accessory equipment. Federal regulations allow up to 28 cubic feet of equipment.

Specific Comments on the City’s Small Cell Wireless Facilities Permit Guidelines

- Fees. AT&T looks forward to working with the City to ensure its proposed fees comport with state and federal laws.
- Concealment. Many of the City’s design standards require concealment. While AT&T is willing to work with the City on concealment, under the FCC’s aesthetic standard for small cells, concealment cannot be required to a greater extent than imposed on other infrastructure deployments in the rights-of-way. For example, there are non-concealed electric distribution facilities throughout the City’s rights-of-way.
- Other Permits Required. Section VI(5) requires an applicant to obtain all other permits and regulatory approvals. The FCC has made clear that all associated permits and approvals, inclusive of appeals, are subject to the applicable shot clock.³

³ See *id.* at ¶¶ 132-137, 144 (The FCC made clear that this timeframe applies “to all authorizations a locality may require, and to all aspects of and steps in the siting process, including license or franchise agreements to access

- Appeals. The City's permit guidelines authorize appeals. The City must take final action, inclusive of appeals, within the applicable shot clocks. The City should consider eliminating appeals for small cells and eligible facilities requests that may otherwise add unnecessary pressure on the City to meet the FCC's shot clocks.
- Network Map. Section XIII(3) requires an overview map of the applicant's network within the City showing future wireless facilities. The City should eliminate this requirement. AT&T does not have a list of facilities planned far into the future. Instead, AT&T continually monitors its network and deploys wireless facilities to address existing and forecasted service issues as needs arise.