

EXHIBIT 4

Appeal



Case No. EP-823-SW-CA-GLENDA-0023
Date 8-20-2023 C(N)

Submit 3 copies of this application, along with the required fee, to:
Permit Services Center (PSC), 633 East Broadway, Rm. 101, Glendale, California, 91206 (Monday thru Friday, 7:00 am to 12:00 pm);

Or to:

Community Development Department (CDD), 633 East Broadway, Rm 103, Glendale, California, 91206 (Monday thru Friday, 12:00 pm to 5 p.m.).

For more information please call the PSC at 818.548.3200, or the Planning Division at 818.548.2115.

Please complete (PRINT or TYPE) the following information:

PART 1 – NOTICE TO APPELLANT (please read carefully)

- A. This form must be prepared, and 3 copies filed, within 15 days of the date of the decision being appealed.
- B. Every question must be answered.
- C. If a question does not apply, you must answer "does not apply" or words to that effect.
- D. Failure to properly fill out this notice or failure to make a sufficient statement of a case in this notice, even if in fact you have valid and sound grounds for appeal, may cause your appeal to be dismissed forthwith.
- E. Attach additional pages for long answers.
- F. Prior to completing this form, read the Glendale Municipal Code, Title 2, Chapter 2.88 Uniform Appeal Procedure on the City's webpage at www.ci.glendale.ca.us/gmc/2.88.asp

PART 2 – APPELLANT INFORMATION

A. Patrick Masahi Patrick-Masahi@hotmail.com
First Name Last Name Email Address

B. 1545 W. Kenneth Rd. Glendale Ca. 91201 818 261 3874
Street Address City State Zip Code Area Code - Phone Number

PART 3 – APPEAL BACKGROUND INFORMATION

- A. State the name or title of the board, commission or officer from which this appeal is taken Yazdan Emrani
- B. Were you given written notice of the action, ruling or determination? Yes No
If "Yes," attach a copy of the written notice and write the date you received it here Aug 15 2023
If "No," give the following information concerning your receipt of notice of the action, ruling or determination.
Date _____ Time _____ Location _____ Manner _____
- C. State generally what kind of permit, variance, ruling, determination or other action was the basis for the decision from which the appeal is taken Verizon Wireless 5G encroachment Permit at 1544 W. Kenneth Rd. Glendale, Ca. 91201 EP-823 SW-CA-Glendale 00237 C(NP)
- D. State the specific permission or relief that was originally sought from the board, commission, or officer I offered Verizon Wireless Representatives and the hearing officer an alternative site. They never took that into consideration. There is a school at 1545 West Kenneth Rd. The health of the kids do matter.
- E. Were you the party seeking the relief that was originally sought? Yes No
If "No," how are you involved with the permit, variance, ruling, determination, or other action referred to above? I am a property owner and I am seeking to protect the health and safety of my tenants and my neighbors, and to protect our property values.
- F. Does this matter involve real property? Yes No
If "Yes," give the address, or describe the real property affected This matter involved the appeal for placing a 5G tower in a public Right of way in middle of a neighborhood with single family homes.

PART 4 – STATEMENT OF ERROR

A. Do you contend that there was a violation of a specific provision of law, which forms the basis for this appeal?

Yes No If "Yes", state each specific provision of law that you contend was violated:
Health of the public is being threatened and endangered as well as property values.

B. Do you contend that the board, commission or officer exceeded its authority by virtue of any of the provisions of law given in answer "A"? Yes No If "Yes", state which provisions, and state specifically each act that was in excess of authority:

The hearing officer/decision maker never questioned the health impact of his tower. The hearing officer never looked at the discrimination against Armenian American property owners vs. Lutheran church.

C. Do you contend that the board, commission or officer failed to fulfill a mandatory duty by any provision of law given in answer "A"? Yes No If "Yes", state which provision, and the specific duty that it failed to exercise:

The officer rubber stamped his decision based on FCC guidelines and never questioned why Verizon decided to cancel the 5G tower at 1121 Brand Blvd (Lutheran church) and place the tower at 1544 W. Kenneth Rd.

D. Do you contend that the board, commission or officer refused to hear or consider certain facts before rendering its decision? Yes No If "Yes", state each such fact, and for each fact, state how it should have changed the act, determination or ruling:

E. Do you contend that the evidence before the board, commission or officer was insufficient or inadequate to support its action, determination or ruling or any specific finding in support thereof? Yes No

If "Yes", state what evidence was necessary, but lacking: Verizon never presented a 15 or 20 year study on the health and safety of 5G technology.

F. Do you contend that you have new evidence of material facts not previously presented, which if considered should change the act, determination or ruling? Yes No If "Yes", state each new material fact not previously presented to the board, commission or officer. For each fact, state why it was not available, or with the exercise of reasonable diligence could not have been discovered and previously presented by the appellant:

We didn't know about the cancellation of 1121 Brand Blvd until after the hearing with Public Records pull.

Statement of additional facts related to the appeal: The health and property values of all residents matter. Verizon has violated our right to protect our health by proposing to place a 5G tower at 1544 W. Kenneth Rd. All 7 homes surrounding this tower are owned by Armenian Americans. Verizon has cancelled 1121 Brand site (Lutheran church + school). This is a discrimination case appeal and will be legally challenged in court if Verizon and

The foregoing statements, contained in PARTS 2, 3 and 4 above, are true and correct to the best of my knowledge and belief.

Patrick Masiki

city of Glendale
move forward with the
Project.

Appellant's Name – Please Print

Patrick Masiki

Appellant's Signature

Date Signed

8-21-2023

FOR STAFF USE ONLY

Date received in Permit Services Center _____ Received by _____

Date Stamp

Fee paid _____ Receipt No. _____

Patrick Masihi

8-23-23

1545 W. Kenneth Rd.

Glendale Ca. 91201

Appeal of Case EP-823 SW-CA-Glenda-00237 C (NP)

Site address: 1544 W. Kenneth Rd. Glendale Ca. 91201

Statement of fact and Questions:

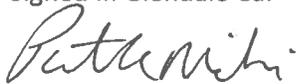
5G technology is new and has no long term health studies that show its safe. The health of all residents matter and placing a 5G tower at 1544 W. Kenneth Rd endangers the health of the residents, especially given the concerns presented by major US health organizations such as NIH (National Institute of Health) and the Environment health Trust.

All 7 properties in the immediate surrounding of this proposed site are owned by Armenian Americans. Verizon and City of Glendale have approved the 5G tower at this site, but the site at 1121 Brand Blvd (Lutheran Church and School) was cancelled by Verizon. Why is the Lutheran Church site being cancelled and the site at 1544 W Kenneth Rd, a predominately Armenian American single-family pocket, being approved?

There is a daycare school at 1545 W Kenneth Rd. Do the Lutheran church patron and school kids have more rights to their health than predominately Armenian American homeowners and children attending the daycare school at 1545 W. Kenneth Rd?

Property values of homes that are in proximity of 5G towers are lower than homes that don't have 5G towers, according to numerous Real Estate organizations. Why should the property owners at 1500 block of Kenneth road be negatively impacted due to the placement of this proposed 5G tower. Which party will compensate the owners for the loss of the property value as well as lower or no monthly rental fees, due to lack of tenants that want to live across a 5G tower?

Signed in Glendale Ca.



Patrick Masihi

The notion that exposure to radiofrequency (RF) 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 five years, has now been proven false.

Recent and Significant Health Studies on RF Radiation*

The National Institutes of Health (NIH) study. This \$30 million-dollar study, conducted by the National Toxicology Program (NTP) of the NIH, was designed to determine whether exposure to RF radiation emitted by cell phones and other wireless devices could cause cancer. A review of the data by independent experts showed that the causal relationship was much stronger than previously thought. Despite industry spin, experts have labeled this study as "clear evidence" of the link between RF radiation and carcinogenicity.

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

Yale University researchers led by Dr. Hugh Taylor, Chair of the Department of Obstetrics, Gynecology and Reproductive Sciences, conducted a groundbreaking study (Aldad, *et. al*, 2012) where they found that pregnant laboratory mice exposed to ordinary cell phone radiation produced offspring that were more hyperactive and had poorer memories compared to a control group that was not exposed. They concluded that cell phone radiation had damaged neurons in the prefrontal cortex of the brain.

An article published in Pub Med titled "*Risks to Health and Well Being from Radiofrequency Radiation emitted by Cell Phones and Other Wireless Devices*" (Miller, et al, 2019) urged the World Health Organization to re-evaluate and upgrade its classification of the human carcinogenicity of RF radiation and implored governments, public health authorities and physicians/allied health professionals to support measures to reduce all exposures to RF radiation.

Reproductive Health Studies. Several recent studies have been conducted to investigate the direct influence of RF radiation on sperm. The conclusion of virtually all independent studies is that men who carried their phones in a pocket or on the belt were more likely to have lower sperm counts and/or more inactive or less mobile sperm. These findings corroborate similar results in laboratory animals.



This document was produced for Americans for Responsible Technology by Grassroots Communications, Inc. a non-profit organization. A Tool Kit with this and other documents is available at AmericansForResponsibleTech.org

What 5G Could Mean for Property Values in Your Town



4 bdr, 2 bath, EIK, LR, FR w/fireplace, all new appliances, great 5G wireless reception!

\$ 370,000



4 bdr, 2 bath, EIK, LR, FR w/fireplace, all new appliances, fully wired with fiber optic!

\$ 425,000

Property owners and real estate professionals are right to be worried about the value of homes and apartments near wireless antennas.

According to a survey published in Realtor Magazine, 94% of home buyers said they are less interested and would pay less for a property located near a cell tower or antenna, and 79% of the respondents said they would never purchase or rent such a property.*

Americans have a right to protect their property values and to the quiet enjoyment of their homes without constant involuntary exposure to radiation from nearby wireless antennas. That's why many real estate professionals are joining the effort to push back against the deployment of unnecessary "small cell" 4G/5G antennas in our neighborhoods.

To learn more about the science and why 5G antennas may significantly reduce property values, please visit AmericansForResponsibleTech.org.



AmericansForResponsibleTech.org

* "Cell Towers, Antennas Problematic for Buyers" REALTOR Magazine, July 25, 2014

5G Technology vs. Science and Freedom of Choice



5G is the latest generation of wireless technology utilizing radiofrequency (RF) radiation. It adds higher frequencies in the millimeter and sub-millimeter range to transmit large amounts of data, but it works best over short distances, requiring close proximity to users and a dense deployment of small cell antennas in neighborhoods across America.

- Human exposure guidelines for RF radiation used by the Federal Communications Commission (FCC) are more than 25 years old and address the thermal effects (heating of tissue), not other biological effects at non-thermal levels which have now been firmly established. The guidelines have been under intense scrutiny by the research community, and the subject of several lawsuits, with no resolution, creating an uncertain regulatory environment.
- Over the last 20 years a robust body of independent science has emerged, showing significant biological impacts, including cancer, neurological and cognitive harm, heart abnormalities, reproductive effects and microwave sickness among other serious health problems. Populations especially at risk include pregnant women, children, the elderly, individuals with implanted medical devices, and those with cardiac or neurological problems.*
- More than 250 medical and public health professionals have signed the International EMF Scientists Appeal, urging government officials to consider the latest science on RF radiation and human health and harm to animals and plants.
- Freedom of choice is a fundamental American value. The FCC and the telecom industry should not force American citizens to endure involuntary exposure to powerful RF radiation 24/7 in their own homes or apartments.
- Major insurance companies have refused to insure telecoms against losses from personal liability claims related to exposure to RF radiation. Swiss Re, the second-largest reinsurance company in the world, has classified 5G as a “high impact” liability risk due to potential adverse health impacts.
- Local governments across the country are busy strengthening their municipal codes to protect their communities. Many are rejecting applications for 5G “small cell” antenna installations near homes and schools on the basis of aesthetics, safety, privacy, property values, security, lack of insurance and a failure by applicants to prove a significant gap in personal wireless service coverage.



Children are especially vulnerable to wireless radiation

*A digest of recent independent scientific studies documenting biological harm from exposure to RF radiation can be found at www.AmericansForResponsibleTech.org/scientific-studies


[Contribute](#)
[Newsletter Sign Up](#)


[HOME](#)
[ABOUT](#)
[BASICS](#)
[SCIENCE](#)
[TAKE ACTION](#)
[TOOL KIT](#)

Wireless Radiation: An Undeniable Risk to 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.¹ 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.

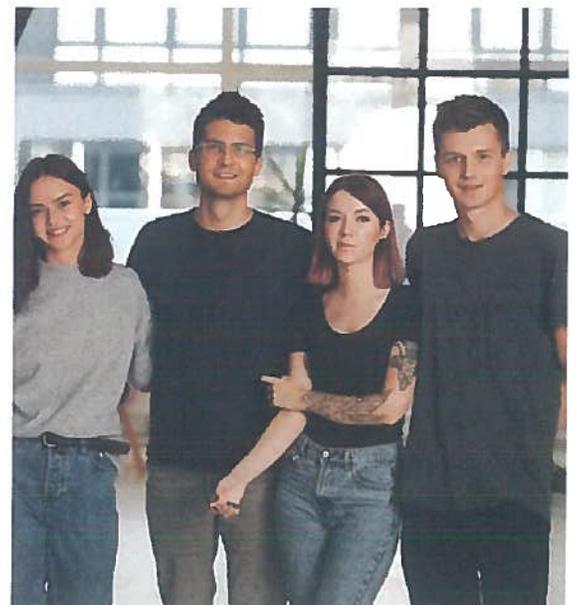
The finding was especially remarkable because **biological damage from exposure to wireless radiation was something that electrical engineers and telecom companies had steadfastly claimed was impossible.** Exposure could heat tissue if you got too close to an antenna, the engineers and physicists told 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.²

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."³

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.⁴ 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."⁵

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.⁶

The following year, scientists at the 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.¹⁰

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.

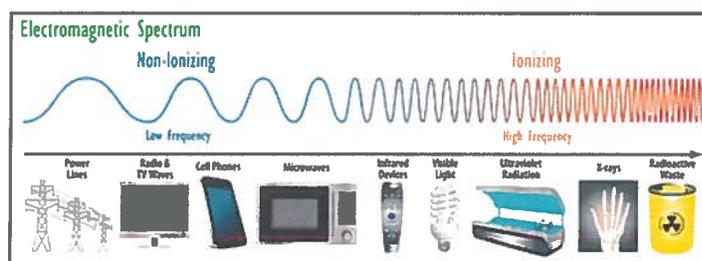
Research continued through the 1980s, much of it focusing on the further effects of thermal heating, particularly an increase in temperature in the tissue, which typically triggers physiological and behavioral thermal regulatory responses.

These responses involve neural activities both in the central and peripheral nervous systems.¹¹ 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.¹²

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.¹³

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



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.⁷ 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.⁸ The effect of non-ionizing radiation is indirect, inducing biochemical changes in cellular structures and their membranes.⁹

today.¹⁴ 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.¹⁵

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.¹⁶ 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.¹⁷

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

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 $\mu\text{W/g-1}$).¹⁸

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.¹⁹

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 2004.²⁰

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.²¹

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.²²



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.²³ Prenatally exposed rat pups also had damaged spinal cords.²⁴

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.²⁵

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.²⁶ 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.”**²⁷



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.²⁸

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.²⁹ 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.³⁰

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,³¹ the U.S. Department of Defense³² and the EPA.³³

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.”³⁴

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.”³⁵



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.³⁶

Biological harm to living organisms

Science is revealing harm to all living organisms, including trees,³⁷ plants, animals, insects, and bacteria, from radiofrequency EMR exposure with levels at or below current U.S. safety guidelines.³⁸

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.³⁹

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.⁴³

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 radio-frequency 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.⁴⁴

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.⁴⁵

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



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).⁴⁰ 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.⁴¹ Research has demonstrated abnormalities in reproduction and behavior of birds nesting near cell towers.⁴²

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

better foundation from which we can extrapolate that this increased EMR exposure is an undeniable risk to our health and the environment.⁴⁶

This page was compiled by Grassroots Environmental Education, a science-based non-profit organization. The text of this page is available in booklet form from the [Americans for Responsible Tech store](#).

Large portions of this document were adapted from the [Summary Statement of Physicians for Safe Technology: Wireless Technology and Public Health](#), and we are grateful for their contributions and expertise in preparing this manuscript. Read the original [here](#).

Sources

View Sources



HOME

ABOUT

BASICS

SCIENCE

TAKE ACTION

TOOL KIT

Contact Us

Email: info@AmericansForResponsibleTech.org

© Americans for Responsible Technology is managed by Grassroots Communications, Inc., a non-profit organization.

The information provided on this website and in the materials it contains is intended for educational purposes only, and should not be construed as providing legal advice. Please consult a qualified attorney before taking any legal action.

5G, CELL TOWERS AND SMALL CELLS

SCIENTIFIC RESEARCH

CHILDREN'S VULNERABILITY TO WIRELESS RADIOFREQUENCY (RF) RADIATION



The American Academy of Pediatrics states:

"In recent years, concern has increased about exposure to radio frequency (RF) electromagnetic radiation emitted from cell phones and phone station antennas. An Egyptian study confirmed concerns that living nearby mobile phone base stations increased the risk for developing:

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

Short-term exposure to these fields in experimental studies have not always shown negative effects, but this does not rule out cumulative damage from these fields, so larger studies over longer periods are needed to help understand who is at risk. In large studies, an association has been observed between symptoms and exposure to these fields in the everyday environment."

-American Academy of Pediatrics
HealthyChildren.org

Cell towers and cell phones emit wireless radiofrequency (RF) radiation.

Children are more vulnerable to RF radiation, just as they are to other environmental exposures. They have proportionately more exposure to RF compared to adults. More importantly, a child's brain is rapidly developing and more sensitive. Even very low exposures in childhood can have serious impacts later in life.

Children absorb higher levels of RF radiation deeper into their brains and bodies because they have:

- Thinner skulls allow RF radiation to move easier into the brain.
- Higher water content in brain tissue which is more conductive to electricity.
- Smaller heads result in a shorter distance for the RF to travel from the skull to critical brain regions important for learning and memory.

Children are more sensitive to RF impacts because:

- Their brains are still developing.
- Children have more active stem cells- a type of cell scientifically found to be uniquely impacted by RF.
- Children will have a longer lifetime of higher exposures, starting from before they are born.

PUBLISHED RESEARCH STUDIES



RESEARCHERS RECOMMEND CELL TOWERS BE DISTANCED AWAY FROM HOMES AND SCHOOLS

The review paper entitled “**Limiting liability with positioning to minimize negative health effects of cellular phone towers**” reviewed the “large and growing body of evidence that human exposure to RFR from cellular phone base stations causes negative health effects.” The authors recommend restricting antennas near homes, and restricting antennas within 500 meters of schools and hospitals to protect companies from future liability (**Pearce 2020**).

An **analysis** of 100 studies published in *Environmental Reviews* found approximately 80% showed biological effects near towers. “As a general guideline, cell base stations should not be located less than 1500 ft from the population, and at a height of about 150 ft” (**Levitt 2010**).

A **review** published in the *International Journal of Occupational and Environmental Health* found people living less than 500 meters from base station antennas had increased adverse neuro-behavioral symptoms and cancer in eight of the ten epidemiological studies (**Khurana 2010**).

A **paper** by human rights experts published in *Environment Science and Policy* documented the accumulating science indicating safety is not assured, and considered the issue within a human rights framework to protect vulnerable populations from environmental pollution. “We conclude that, because scientific knowledge is incomplete, a precautionary approach is better suited to State obligations under international human rights law” (**Roda and Perry 2014, PDF**).

CELL TOWERS NEAR SCHOOLS

SCHOOL CELL TOWER SETBACKS

Many communities have policies, ordinances or zoning that ensures cellular antennas are restricted to a specific minimum distance from schools. Hempstead, New York requires a special use permit for cell towers near schools.

Examples of cell tower/4G/5G small cell setbacks/preferred placements for schools:

- Palo Alto, California: 1,500 feet
- Copake, New York :1500 feet
- Los Altos , California: 500 feet
- Walnut City, California: 1,500 feet
- Bar Harbor, Maine: 1,500 feet
- Sallisaw, Oklahoma: 1,500 feet
- Shelbourne , Massachusetts: 1,500 feet
- Stockbridge, Massachusetts: 1,500 feet
- San Diego County California 1,000 feet
- Encinitas California:500 feet
- Scarsdale New York: 500 feet
- Ithaca, New York: 250 feet

CELL TOWERS REMOVED FROM SCHOOL GROUNDS

- Milpitas California: School Board asked Crown Castle and T-Mobile to relocate the cell tower to remote location.
- Ripon California: Sprint moved the cell tower at elementary after students and staff developed cancer and parents argued children should not be guinea pigs.
- Alameda California cancelled cell tower contracts.
- Dekalb County Georgia dropped school tower plan.

SCHOOL BOARDS

- Palo Alto Unified School District Cell Tower Resolution supports the City 1,500 setback and opposes cell tower "on or in close proximity to schools to ensure individuals, especially children, are protected from the potential negative effects associated with radiation exposure."
- West Linn-Wilsonville Oregon School Board prohibits cell towers on school property.
- Vancouver School Boards Resolution: 1,000 feet
- Greenbelt Maryland Council opposes school towers.

DID YOU KNOW?

- The International Association of Firefighters passed a Resolution opposing cell towers on its stations in 2004 after a study found neurological damage in firefighters with antennas on their fire stations.

LOS ANGELES UNIFIED CA SCHOOL DISTRICT

- 3 resolutions opposing cell towers on school property.
- The District Office of Health and Safety developed a "cautionary level" for radiofrequency radiation 10,000 times lower than FCC regulations because, "it is believed that a more conservative level is necessary to protect children, who represent a potentially vulnerable and sensitive population."

SCHOOL BOARDS THAT REVERSED COURSE

- Montgomery County Maryland Schools policy does not allow cell towers on elementary schools.
- Prince George's County Maryland School Board decided not to renew a cell tower construction master leasing agreement that had allowed over 60 schools to be marketed as cell tower sites.
- Portland Oregon Schools ended new leases for cell towers.

EXPERT RECOMMENDATIONS

- The New Hampshire State Commission 5G Health and Environment Report recommends a setback of 1640 feet for schools.
- The Collaborative For High Performance Schools (Green building rating program) has LOW EMF Criteria which includes no cell towers on school property.

THE EPA SCHOOL SITING GUIDELINES

Lists exposure to electromagnetic fields and the fall distance as "potential hazards" from cell towers. The EPA guidelines recommend schools "identify and evaluate cell towers within ~200 feet of prospective school locations."

PUBLISHED RESEARCH

- 500 meter buffer recommended for schools to reduce liability and minimize risk (Pearce 2019)
- A moratorium on 5G pending safety research (Frank 2020)
- A precautionary approach is better suited to State obligations under international human rights law (Roda and Perry 2014)
- Increased cancer deaths near cell antennas (Rodrigues 2021)
- Studies find: DNA Damage(Zothansiana 2017), Diabetes (Meo 2015), Cognitive effects (Meo 2018), sleep problems and headaches (Abdel-Rassoul 2007, Levitt & Lai 2010, Shahbazi-Gahrouei 2013)

CELL TOWERS & WIRELESS

BC CONFEDERATION OF PARENT ADVISORY COUNCILS

- Two resolutions. One calls on each Board of Education to have one public school at each education level that is free of Wi-Fi, cordless phones, and cell phones.
- The second calls on the Boards of Education to “cease to install Wi-Fi and other wireless networks in schools where other networking technology is feasible.”

CALIFORNIA PTA

- Resolution on Electromagnetic Fields
- PTA can educate and inform districts, councils and units about the potential hazards of EMFs to encourage school districts and schools to develop risk reduction policies and to disseminate information on the subject.”

PALO ALTO, (CA) PTA

- Fact sheet on “Safe Use of Technology” which distributed to all the schools in the Palo Alto Unified School District

PACIFIC GROVE (CA) PTAS

- Forest Grove Elementary Pacific Grove Middle School and Pacific Grove High School PTAs sent a letter to City Council opposing a high school cell tower.

FLETCHER HILLS (CA) PTA

- Resolution encouraging schools to use cable lines Internet connections and to avoid wireless networks on campus.

FLETCHER HILLS (CA) PTA

- Resolution encouraging schools to use cable lines Internet connections and to avoid wireless networks on campus.

PHOENICIA ELEMENTARY NY PTA

- Sent a letter to the Onteora School District calling for the Wi-Fi to be turned off.

NEELSVILLE MIDDLE SCHOOL PTA (MD)

- Voted to oppose proposed cell tower.
- Hosted parent information session with both the cell tower company and Environmental Health Trust.

NEW YORK STATE PTA

- Resolution on Cell Towers supporting:
 1. laws that regulate tower placement near schools
 2. research into the long-term effects of RFR
 3. education for parents and school officials regarding cell towers and health.

CASTLE HILL HIGH SCHOOL (AUSTRALIA) P&C COMMITTEE

- Funded ethernet plugs to reduce wireless exposure in classroom.
- Developed "Mobile Phone Safety Tips & Cyberbullying Information," which includes how to reduce cell phone and wireless radiation

MONTGOMERY COUNTY (MD) PTA

- Safe Tech PTA Committee shares online and print resources on reducing RFR exposure and on digital safety issues such as privacy.
- Meets monthly with school IT department.

HILLSMERE ELEMENTARY SCHOOL PTA (MD)

- Sent letters to the school board in opposition to cell towers near the school.

BRIARLAKE ELEMENTARY (GA)

- Voted to oppose cell tower after board approved towers on schools.



NORTH AMERICA TEACHER UNIONS

WI-FI IN SCHOOLS

UNITED EDUCATORS OF SAN FRANCISCO

- Resolution on Safer Technology calls for the California cell phone advisory on how to reduce cell phone exposure be disseminated to students and staff.
- Webinars on reducing RF exposure.

CANADA TEACHER FEDERATION

- Briefing document "Wi-Fi in School" recommends limiting Wi-Fi.

UNITED TEACHERS OF LOS ANGELES

- 2013 Resolution "UTLA will advocate for technological solutions that maintain technology upgrades while not increasing employees exposure to electromagnetic radiation."

UNITED FEDERATION OF TEACHERS

- Website shares Dr. Moskowitz's "Reducing Exposure to Wireless" brochure and The BabySafe Project "What You Need to Know About Wireless Radiation and Your Baby."

ELEMENTARY TEACHERS FEDERATION OF ONTARIO

- Call for Wi-Fi moratorium until health studies done (Limestone).

BC TEACHERS FEDERATION

- Resolution supporting members suffering from electromagnetic hypersensitivity by ensuring that their medical needs are accommodated in the workplace.

NEW JERSEY EDUCATIONAL ASSOCIATION

- Recommendations in "Minimize health risks from electronic devices" detail how to reduce physical health risks from devices including wireless radiation.

ONTARIO ENGLISH CATHOLIC TEACHERS

- Position Statement recommends wired networks as Wi-Fi "may present a potential health and safety risk or hazard in the workplace."

GREATER VICTORIA TEACHERS ASSOCIATION

- Recommends minimal or non-use of Wi-Fi.

NEW YORK STATE UNITED TEACHER UNION

- Resolution "Hazards of Wireless Radiation Emission" and "Best Practices" recommend wired ethernet connections.
- Webinar "Risks of wireless technologies and protecting children and staff in schools."

AMERICAN FEDERATION OF TEACHERS

- National Conference presentation about wireless radiation posted online.

NEW JERSEY EDUCATIONAL ASSOCIATION

- Put devices on desks, not laps.
- Hard wire all devices that connect to the internet.
- Hard wire all fixed devices such as printers, projectors and boards.
- Use hard-wired phones instead of cell or cordless phones.
- Put devices in airplane mode, which suspends EMF transmission in the device, disabling Bluetooth, GPS, phone calls, and WiFi.

"All educational facilities must have healthy indoor air quality, be smoke-free, be safe from environmental and chemical hazards, and be safe from hazardous electromagnetic fields."
— National Education Association

"Students and/or their parents/guardians, education employees, and the public should be notified of actual and potential hazards."
— National Education Association
2013-2014, C-19

OPPOSE CELL TOWERS

Silver Spring, Maryland

Google



CONEJO PTA WANTS CELL TOWER MOVED Op-ed in Thousand Oaks Acorn Journal

The California PTA advocates on behalf of children and families. They advocate against electromagnetic field radiation your schools.

The Conejo PTA urges the use of the precautionary principle in making decisions regarding public health this means if something cannot be proven to be safe it is best to avoid exposure. Most people don't realize that the 1996 FCC state standards for safe levels of omission was actually based on a level set by the American national standards institute in 1982. Well this standard has not been changed in 30 years it has usurped all local authority."

"For this reason, Conejo Council PTA made up of 9000 parents and teachers has decided to take action. We're calling on our local leaders to put in place policies that would ensure parents are notified when cell towers are propose near schools and then encourage a buffer zone around schools."

-Kim Huber, legislative chair of the Conejo Council PTA.

NEW YORK STATE PTA -Adopted TWO Resolutions 2014

"CELLULAR PHONE TOWERS – 2014 (R-'07, R-'00); Resolved that the New York State Congress of Parents and Teachers, Inc. support legislation that would encourage local communities, including parents and school officials, to regulate the placement of cell towers and cell tower antennas particularly in schools and areas where children congregate,

and be it further Resolved that the New York State PTA support continued research into the long-term effects of radio frequency and microwave frequencies on humans especially as they apply to children, and be it further Resolved that the New York State PTA seek to educate parents and school officials as to the current debate over the placement of cell towers and antennas."

NEELSVILLE MIDDLE SCHOOL PTA (MD)

- Voted to oppose proposed cell tower.
- Hosted parent information session with both the cell tower company and Environmental Health Trust.

HILLSMERE ELEMENTARY SCHOOL PTA (MD)

- Sent letters to the school board in opposition to cell towers near the school.

BRIARLAKE ELEMENTARY (GA)

- Voted to oppose cell tower after board approved towers on schools.

PACIFIC GROVE (CA) PTAs

- Forest Grove Elementary Pacific Grove Middle School and Pacific Grove High School PTAs sent a letter to City Council opposing a high school cell tower.

OPPOSE CELL TOWERS

Agenda No. 11A Attachment B
Exhibit A Page 46 of 186

August 6, 2018

Pacific Grove City Council
City Hall
300 Forest Ave.
Pacific Grove, CA 93950

Dear members of Pacific Grove City Council,

I am writing you on behalf of Pacific Grove High School PTA in regard to the Pacific Grove Planning Commission's vote on July 26, 2018, which approved a request by Verizon Wireless to install and maintain a cell tower adjacent to Pacific Grove High School (PGHS). For the reasons described below, the Pacific Grove High School PTA **is strongly opposed** to the location of the Verizon cell tower and is requesting that the City Council consider and support the appeal that is being filed by a group of concerned parents who live in Pacific Grove and send their children to PG schools.

The installment of a cell tower adjacent to PGHS poses significant potential health dangers to both students and staff at PGHS. While some argue that radiation emitted from a cell tower is not a health danger, data from many studies indicate the opposite. Research shows that children and pregnant women are the most vulnerable – two demographics most likely to be on PGHS school grounds on a regular basis. The actual placement of the cell tower—near the back of PGHS and very close to Forest Grove Elementary School—only increases the concerns of the frequency in exposure.

Cell towers also pose a risk to students due to fire hazard. Many cell towers throughout the United States have caught fire and collapsed, posing a significant safety concern, especially in an area with young students walking to and from school every day.

The mission of all PTAs nationwide is to make every child's potential a reality by engaging and empowering families and communities to advocate for all children. Our local PTA is very active in expressing our support for or opposition to issues dealing with the health, safety, education, or general well-being of children and youth in our community.

The members of the Pacific Grove High School PTA strongly urge you to please reconsider the Pacific Grove Planning Commission's previous vote and rescind approval for the Verizon cell tower at Pacific Grove High School.

Sincerely,

Julie Kavanaugh
President, Pacific Grove High School PTA

CELL TOWER RF RADIATION AND CANCER

International Agency for Research on Cancer



World Health
Organization

PRESS RELEASE
N° 208

31 May 2011

IARC CLASSIFIES RADIOFREQUENCY ELECTROMAGNETIC FIELDS AS POSSIBLY CARCINOGENIC TO HUMANS

Lyon, France, May 31, 2011 -- The WHO/International Agency for Research on Cancer (IARC) has classified radiofrequency electromagnetic fields as possibly carcinogenic to humans (Group 2B), based on an increased risk for glioma, a malignant type of brain cancer¹, associated with wireless phone use.

The World Health Organization International Agency for Research on Cancer Classified Radiofrequency Radiation as a "Possible" Carcinogen in 2011

In 2011, radiofrequency electromagnetic fields (RF-EMF) were classified as a Group 2B possible carcinogen by the World Health Organization's International Agency for Research on Cancer (WHO/IARC).

The WHO/IARC scientists clarified that this determination was for RF-EMF from any source be it cell phones, wireless devices, cell towers or any other type of wireless equipment.

Since 2011, the published peer-reviewed scientific evidence associating RF-EMF (also known as RF-EMR and RFR) to cancer and other adverse effects has significantly increased.

A large-scale animal study published in Environmental Research found rats exposed to RF levels comparable to cell tower emissions had elevated cancers, the very same cancers also found in the US National Toxicology Program animal study of cell phone level RF that found "clear evidence" of cancer in carefully controlled conditions (Falcioni 2018).

In 2019, the WHO/IARC advisory committee recommended that radiofrequency radiation be re-evaluated as a "high" priority in light of the new research. The date of the re-evaluation has not been set.

Currently, several scientists conclude that the weight of currently available, peer-reviewed evidence supports the conclusion that radiofrequency radiation is a proven human carcinogen (Hardell and Carlberg 2017, Peleg et al. 2022, Miller et al. 2018).

SCIENTIFIC RESEARCH STUDIES



European Parliament requested a research report "**Health Impact of 5G**" which was released in July 2021 and concluded that commonly used RFR frequencies (450 to 6000 MHz) are probably carcinogenic for humans and clearly affect male fertility with possible adverse effects on the development of embryos, fetuses and newborns.

A review entitled "**Evidence for a health risk by RF on humans living around mobile phone base stations: From radiofrequency sickness to cancer**" reviewed the existing scientific literature and found radiofrequency sickness, cancer and changes in biochemical parameters (**Balmori 2022**).

A **study** published in Electromagnetic Biology and Medicine found changes in blood considered biomarkers predictive of cancer in people living closer to cell antenna arrays (**Zothansiana 2017**).

A **study** published in the International Journal of Environmental Research and Public Health found higher exposure to cell network arrays linked to higher mortality from all cancer and specifically lung and breast cancer (**Rodrigues 2021**).

A 10-year **study** published in Science of the Total Environment on cell phone network antennas by the local Municipal Health Department and several universities in Brazil found a clearly elevated relative risk of cancer mortality at residential distances of 500 meters or less from cell phone towers (**Dode 2011**).

A **study** commissioned by the Government of Styria, Austria found a significant cancer incidence in the area around the RF transmitter as well as significant exposure-effect relationships between radiofrequency radiation exposure and the incidence of breast cancers and brain tumors (**Oberfeld 2008**).

A **review** published in Experimental Oncology found "alarming epidemiological and experimental data on possible carcinogenic effects of long term exposure to low intensity microwave (MW) radiation." A year of operation of a powerful base transmitting station for mobile communication reportedly resulted in a dramatic increase of cancer incidence among the population living nearby (**Yakymenko 2011**).

5G & CELL TOWERS



EUROPE

- Resolutions to halt 5G in numerous European cities including Trafford, UK, Lille, France, Ormidia, Cyprus, Councils in Ireland and more.

ITALY

- 600 municipalities have passed resolution to halt 5G.

UNITED STATES

- Los Angeles CA Public Schools: RFR Limit 10,000x less than FCC.
- Resolutions to halt 5G passed in Hawaii County HI, Farragut TN, Keene NH & Easton CT.
- Numerous cities restrict cell antennas near homes including: Los Altos, Petaluma, Mill Valley, Malibu and San Diego County CA, Bedford NH and more.
- New Hampshire 5G Commission's 15 Recommendations include increasing transparency, reduce public exposure, research health effects and protect wildlife and trees.
- Oregon investigating health effects of wireless.
- Palo Alto, Los Angeles LA Schools Greenbelt MD, Bar Harbor ME; No school cell towers

CHILE

- Cell antennas prohibited in "sensitive areas" - kindergartens, hospitals and nursing homes.

BANGLADESH

- No cell towers on homes, schools, colleges, playing fields, populated areas and heritage areas.

FRANCE

- 60 mayors/officials petition to halt 5G.
- Federal health agency investigating 5G
- 5G antenna RFR is measured.

SWITZERLAND

- Parliament refused to weaken radio frequency radiation (RFR) limits after 5G Report.

NETHERLANDS

- Health Council recommends against 26 GHz for 5G due to lack of safety data.

RUSSIA

- No cell towers near schools.

ISRAEL

- Cell tower setback 100m from schools/ homes.

CANADA

- City of Toronto "Prudent Avoidance Policy" for Cell Towers.

BULGARIA

- Mezdra and Balchik have banned 5G.

GREECE

- The installation of cell towers at the premises of schools, kindergartens, hospitals or eldercare facilities is prohibited.

CYPRUS

- Cyprus National Committee on Environment and Child Health 5G Position Paper calls for 5G free zones.

AUSTRALIA

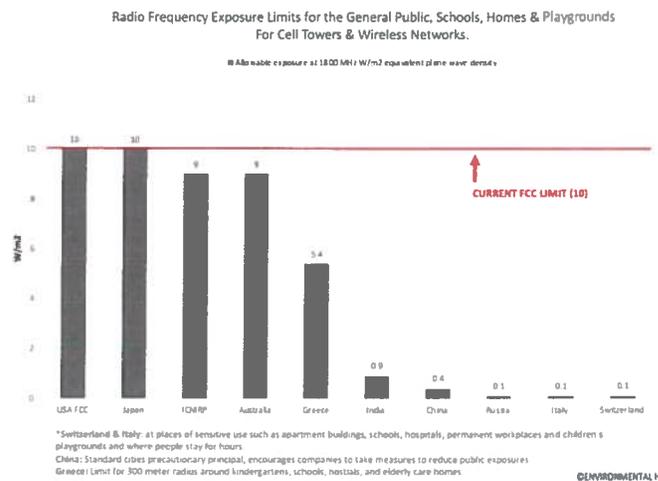
- New South Wales Dept. of Education policy objects to towers on/near schools.

LITHUANIA

- Cell antennas prohibited on kindergartens and hospitals.

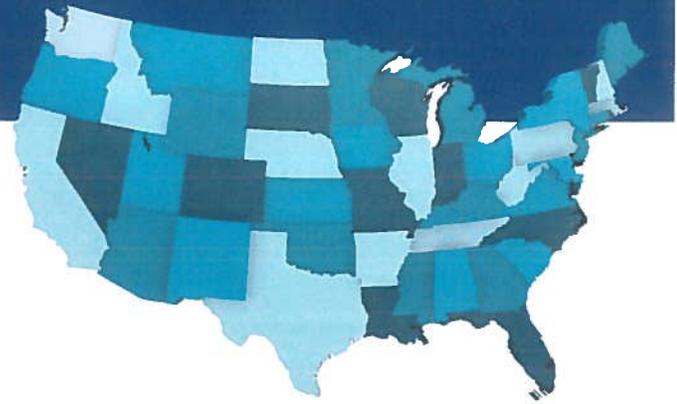
INDIA

- RFR limit tightened to 1/10 of CNIRP limits after Inter-Ministerial Report on impacts to wildlife.
- Mumbai, Zilla Parishad & Karnataka: Cell towers prohibited/removed near schools, colleges, orphanages and old age homes.
- Brihanmumbai Municipal: Cell towers banned at parks and playgrounds.
- State of Rajasthan: Supreme Court of India upheld removal of "hazardous to life" cell towers from vicinity of schools, hospitals/playgrounds.



UNITED STATES OF AMERICA

5G & CELL TOWERS



CALIFORNIA

Numerous CA cities restrict cell antennas near homes with setbacks and strict ordinances including: Los Altos, Petaluma, Mill Valley, Malibu, Santa Barbara, Nevada City, Suisin, Calabasas, San Clemente, Westlake, Sonoma, Sebastopol, San Rafael, Ross Valley, Encinitas, Fairfax, Palo Alto, Walnut City and San Diego County.

As an example of CA ordinances, the Los Altos City ordinance:

- prohibits installation of small cells on public utility easements in residential neighborhoods
- 500 foot setbacks for small cells for multi-family residences in commercial districts
- 500 ft separation from schools
- 1500 ft separation between nodes

San Diego County, California

- "SCWs shall not be located within 1,000 feet of schools, child care centers, hospitals, or churches."

CONNECTICUT

- Easton CN City Council passed a 5G cease and desist resolution
- Warren, Connecticut Policy defines "adequate coverage" and "adequate capacity." and was designed "to locate towers and/or antennas in a manner which protects property values, as well as the general safety, health, welfare and quality of life of the citizens." Coverage is considered to be "adequate" within that area surrounding a Base Station where the predicted or measured median field strength of the transmitted signal is such that the majority of the time, transceivers properly installed and operated will be able to communicate with the base station.

FLORIDA

- Coconut Creek FL Commission adopted a Resolution on 5G and radiofrequency radiation.
- Hallandale Beach FL Resolution urges the federal government to initiate independent health studies on 5G.
- Lavallette FL Resolution 2021-58: Applicant shall obtain certification from the Federal Aviation Administration and the United States Dept. of Defense demonstrating that the installation does not emit RF frequencies which may interfere with avionics of any approaching civil or military aircraft." The City also requires the applicant to provide RF meters used by their technicians and train City employees. Verizon cannot install more than a total of 20 "small cell" nodes throughout the Borough to support 5G.

HAWAII

- Hawai'i County Council passed a Resolution to halt 5G

ILLINOIS

- Oak Brook IL Resolution calls for local control re small cels.

INDIANA

Carmel City IN Council resolution asks state lawmakers, FCC and Congress to limit 5G until health effects fully understood.

MASSACHUSETTS

Randolph MA 500 ft setback. Yearly RFR measurements. Lunenburg and Great Barrington MA 500 ft setback Stockbridge MA prohibits a tower from being built 1000 feet from a school, park or athletic field and 600 ft from residence.

NEW JERSEY

- Little Silver, NJ Carriers should provide notice to property owners within 500 feet of proposed facility.

NEW YORK

- Scarsdale NY: 500 foot setbacks to homes preferred.
- Copake NY: Pre/post testing by RF engineer. No repeater closer than 200 ft to dwelling. No tower closer than 1500 ft to residence/church.
- Community Boards issuing Moratoriums on 5G poles

NEW HAMPSHIRE

- Proposed State Bill - 1640 ft setbacks.
- Keene NH Resolution to halt 5G
- Bedford NH 750 ft. setback

OHIO

- Mason OH Zoning Ordinance No small cells in residential areas or within 100 feet of residential prop; 2000 feet apart (unless colocated); equipment should be underground or wholly contained.

OKLAHOMA

- Sallisaw OK 1,500 feet setback

TENNESSEE

- Farragut City Resolution to halt 5G

WISCONSIN

- Greendale WI passed Resolution R2018-20 referring to the FCC's actions stripping local authority as "an unprecedented attack on local control."

PUBLISHED RESEARCH STUDIES

OUTDOOR LEVELS OF RF ARE INCREASING DUE TO THE DENSIFICATION OF WIRELESS NETWORKS

An [article](#) published in *The Lancet Planetary Health* documents how RF exposures are increasing and so is the scientific research linking exposure to adverse biological effects. "It is plausibly the most rapidly increasing anthropogenic environmental exposure since the mid-20th century..."

A [2021 report](#) by the French government on 5G analyzed more than 3,000 measurements and found that while RF levels had *not yet* significantly increased, this was due to the lack of 5G traffic. Additional study specific to 5G in the 3500 MHz band with artificially generated traffic concluded that, "initial results suggest an eventual increase of about 20% in overall exposure."

A [2018 multi-country study](#) published in *Environment International* measured RF in several countries and found cell tower/base station radiation to be the dominant contributor to RF exposure in most outdoor areas. Urban areas had higher RF.

A [study](#) measuring RF exposure in the European cities of Basel, Ghent and Brussels found the total RF exposure levels in outdoor locations had increased up to 57.1% in one year (April 2011 to March 2012) and most notably due to mobile phone base stations.

A [2018 study](#) published in *Oncology Letters* documented "unnecessarily high" RF levels in several locations in Sweden and concludes that "using high-power levels causes an excess health risk to many people."

A [2017 Swedish](#) study of Royal Castle, Supreme Court, three major squares and the Swedish Parliament found that despite the architecturally camouflaged RF-emitting antennas, the passive exposure was higher than RF levels associated with non-thermal biological effects. The researchers noted that the heaviest RF load falls on people working or living near hotspots.

A [2016 study](#) at Stockholm Central Railway Station in Sweden documented higher RF levels in areas where base station antennas were located closest to people. Importantly, the RF from the downlink of UMTS, LTE, GSM base station antennas contributed to most of the radiation levels.



APARTMENTS & CONDO BUILDINGS

INCREASED RF RADIATION FROM CELL ANTENNAS



The study "[Radiofrequency radiation from nearby mobile phone base stations-a case comparison of one low and one high exposure apartment](#)" published in *Oncology Letters* by [Koppel et al. \(2019\)](#) measured 2 apartments and found that the apartment with high RF levels had outdoor areas as close as 6 meters (about 19.6 feet) from transmitting base station cell antennas. In contrast, the apartment with low RF exposure had cell antennas at 40 meters (about 131 feet) away from the balcony.

Furthermore, the researchers also found that both high- and low-RF apartments had good mobile phone reception, and they concluded, "therefore, installation of base stations to risky places cannot be justified using the good reception requirement argument."

A measurement study by [Baltrėnas et al. \(2012\)](#) published in *Journal of Environmental Engineering and Landscape Management* investigated RF power density levels from cell phone antennas located 35 meters away from a 10-story apartment building. The transmitting antennas were approximately at the same height as the 6th floor of the building. The researchers found the highest RF levels at floors 5, 6 and 7. The RF at the 6th floor balcony was three times higher than the 3rd floor balcony. The RF power density at the 6th floor was about 15 times the RF measured at the first floor.

A [case report by Hardell et al. \(2017\)](#) of RF levels in an apartment in close proximity to rooftop cellular network antennas used an exposimeter to measure levels of different types of RF in the apartment and balconies including TV, FM, TETRA emergency services, 2G GSM, 3G UMTS, 4G LTE, DECT cordless, Wi-Fi 2.4 GHz and 5 GHz and WiMAX. The closest transmitting antennas were 6 meters away from the balcony. The researchers found 97.9% of the mean RF radiation was caused by downlink from the 2G, 3G and 4G base stations. (Downlink means frequencies emitted "down" from the base station cellular antennas.) The researchers found that if the base station RF emissions were excluded, the RF radiation in the children's bedrooms was reduced approximately 99%.

The researchers conclude, "due to the current high RF radiation, the apartment is not suitable for long-term living, particularly for children who may be more sensitive than adults."

INCREASED EXPOSURE FROM 5G/4G "SMALL" CELL ANTENNAS LOCATED CLOSE TO PEOPLE

A study entitled "[Very high radiofrequency radiation at Skeppsbron in Stockholm, Sweden from mobile phone base station antennas positioned close to pedestrians' heads](#)" published in *Environmental Research* by Koppel et al. (2022) created an RF heat map of RF measurements, finding that the highest RF measurements were in areas of close proximity to the base station antennas. The researchers concluded with recommendations to reduce close proximity placements such as positioning antennas "as far as possible from the general public" like in high-elevation locations or more remote areas.

A study entitled "[Measurements of radiofrequency electromagnetic fields, including 5G, in the city of Columbia, South Carolina, USA](#)" published in the *World Academy of Sciences Journal* found the highest RF levels in areas where the cell phone base station antennas were placed on top of utility poles, street lamps, traffic lights or other posts near to the street. The scientists compared their [2022 findings](#) to an earlier [2019 published review](#) on the mean outdoor exposure level of European cities and they found the South Carolina measurements to be higher.

The researchers concluded that the highest exposure areas were due to two reasons: cell phone base antennas on top of high-rise buildings provide "good cell coverage reaching far away, but creating elevated exposure to the radiofrequency electromagnetic fields at the immediate vicinity; and cell phone base station antennas installed on top of utility poles have placed the radiation source closer to humans walking on street level."



Figure 7. Gervais Street: Cell phone base station antenna placed close to street level and causing high exposure to pedestrians and nearby café visitors (exposure scenario illustration). The antenna appears camouflaged and seemingly part of a utility pole. The measurer only discovered the antenna due to the high radiofrequency levels in the vicinity.

HEALTH SYMPTOMS REPORTED BY PEOPLE LIVING CLOSE TO CELL ANTENNAS

Image: Figure 1: Top floor apartment adjacent to base stations. Nilsson M, Hardell L. (2023) Development of the Microwave Syndrome in Two Men Shortly after Installation of 5G on the Roof above their Office. Ann Clin Case Rep



RESEARCH ON ANTENNAS CLOSE TO HOMES, SCHOOL AND WORK

Surveys of people living near cell tower antennas in **France, Spain, Iraq, India, Germany, Egypt, Poland** have found significantly higher reports of health issues including sleep issues, fatigue and headaches (See **Santini et al. 2003, López 2021, Alazawi 2011, Pachuau and Pachuau 2016, Eger et al. 2004, Abdel-Rassoul et al. 2007, Bortkiewicz et al., 2004**).

A **study** published in *American Journal of Men's Health* linked higher cell tower RFR exposures to delayed fine and gross motor skills and to deficits in spatial working memory and attention in school adolescents (**Meo 2018**).

A **study** published in *Environmental Research and Public Health* found higher exposures linked to higher risk of type 2 diabetes (**Meo 2015**).

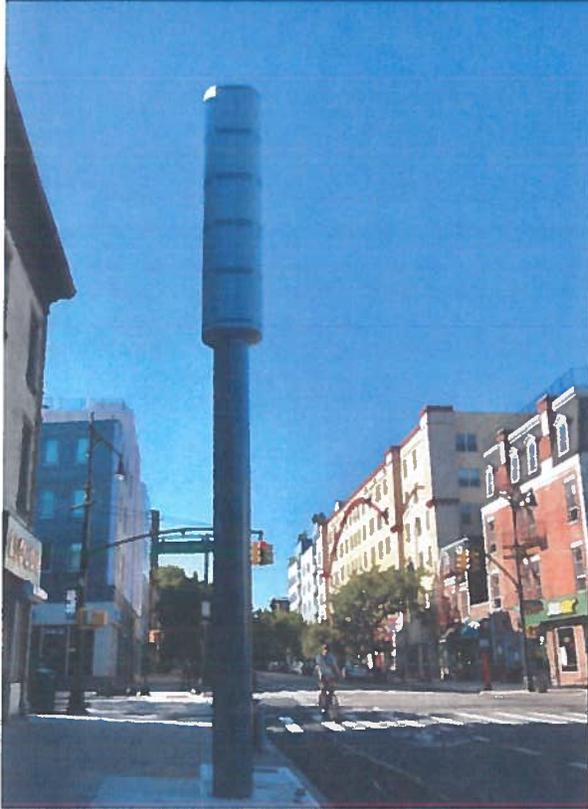
A study following people for 6 years linked increased cell phone and cell phone tower antenna exposure to altered levels of hormones including cortisol, thyroid, prolactin and testosterone (**Eskander et al. 2021**).

A **study** that followed people in a German town after a cell tower was erected found stress hormones adrenaline and noradrenaline significantly increased over the first 6 months after the antenna activation and decreased dopamine and PEA levels after 18 months (**Buchner 2011**).

Two published case report document illness that developed after 5G antennas were installed. In **Hardell and Nilsson 2023**, a couple developed microwave syndrome symptoms (e.g., neurological symptoms, tinnitus, fatigue, insomnia, emotional distress, skin disorders, and blood pressure variability) after a 5G base station was installed on the roof above their apartment.

Similarly, in "**Development of the Microwave Syndrome in Two Men Shortly after Installation of 5G on the Roof above their Office**" two men developed symptoms after 5G antennas were activated on the roof of their workplace. The symptoms disappeared in both men within a couple of weeks (case 1) or immediately (case 2) after leaving the office.

PUBLISHED RESEARCH ON 5G



New York City Jumbo 5G poles with 5 tiers to house transmitting antennas from numerous carriers.



New York City "small cell" antennas in front of living room window.

Scientists state that 5G's higher frequencies cannot be assumed safe.

5G systems are using low band frequencies well associated with harmful effects ([ICBE-EMF 2022](#), [European Parliament 2021](#), [Panagopoulos et al. 2021](#)). However 5G networks are also using higher frequencies such as 3.5 GHz and into the mmWave range with 24 GHz and higher.

Contrary to claims that the 5G's higher frequencies simply "bounce" off the skin, researchers have documented that the coiled portion of the skin's sweat duct can be regarded as a helical antenna in the sub-THz band and the skin, our largest organ, can intensely absorb the higher 5G frequencies ([Feldman and Ben Ishai 2017](#)).

Reviews of 5G health effects caution that the expected real-world impact would be far more serious due to the complex waveforms and other combinations with other toxic stimuli in the environment ([Kostoff et al 2020](#), [Russell, 2018](#), [Belyaev 2019](#), [McCredden et al 2023](#)).

Researchers will often experiment with zebrafish, rodents and fruit flies to gain data on potential health effects to humans. An Oregon State University study on zebrafish exposed to 3.5 GHz ([Dasgupta et al. 2022](#)) found "significant abnormal responses in RFR-exposed fish" which "suggest potential long-term behavioral effects. Yang et al 2022 found 3.5 GHz induced oxidative stress in guinea pigs.

A study on 3.5 GHz exposure to both diabetic and healthy rats ([Bektas et al 2022](#)) found an increase in degenerated neurons in the hippocampus of the brains, changes in oxidative stress parameters and changes in the energy metabolism and appetite of both healthy and diabetic rats. The researchers conclude that, "5G may not be innocent in terms of its biological effects, especially in the presence of diabetes."

PUBLISHED RESEARCH ON 5G



5G's higher frequencies will be combined with the lower frequencies from current networks already present in the environment.

Studies on rats have found exposure to both 1.5 and 4.3 GHz microwaves induced: cognitive impairment and hippocampal tissue damage ([Zhu et al 2021](#)); impairments in spatial learning and memory, *with the combined simultaneous exposures* resulting in the most most severe effects ([Wang et al 2022](#)); and immune suppressive responses ([Zhao 2022](#)).

Long-term exposure to 2.856 and 9.375 GHz microwaves impaired learning and memory abilities as well as EEG disturbance, structural damage to the hippocampus, and differential expression of hippocampal tissue and serum exosomes ([Wang et al. 2023](#)).

Studies on fruit flies exposed to 3.5 GHz have found the exposure led to increases in oxidative stress, changes in the microbial community ([Wang et al 2022](#)) and alterations of the expression of several types of genes (Wang et al 2021).

A review by [Russell 2018](#) found evidence for millimeter wave effects to the skin, eyes, immune system, gene expression, and bacterial antibiotic resistance.

Recent experimental research on high-band 5G impacts to animal fertility found that 27 GHz damages sperm quality in mussels ([Pecoraro et al 2023](#)).

Yet the US government is not funding any research on biological effects of frequencies at 3.5 GHz or above 6 GHz to humans.

5G, CELL TOWERS AND WIRELESS

LEGAL & LIABILITY ISSUES



When a new cell tower is proposed, the first question to ask is: "Do you have insurance for damages from long-term exposure to the radiofrequency radiation (RFR)?"

Usually the answer is "No." Why? Insurance companies rank the risk as "HIGH."

5G and Cell Towers Are an Uninsurable Risk

- Insurers rank wireless, cell tower, and 5G RFR non-ionizing electromagnetic field (EMF) radiation as a "high" risk, comparing the issue to lead and asbestos.
- Most insurance plans have "electromagnetic field exclusions" and do not insure for long-term RFR damages.
- Additionally, some insurance plans will not provide a defense for any supervision instruction or recommendation given "or which should have been given" in connection to EMFs.
- Wireless RFR and non-ionizing electromagnetic radiation are defined as a type of "pollution" by wireless companies themselves.
- U.S. mobile operators have been unable to get insurance to cover liabilities related to damages from long-term RFR exposure.
- Wireless companies warn their shareholders of RFR risk but do not warn users of their products, nor do the companies warn the people exposed to emissions from their infrastructure.

Cell Tower Companies Warn Shareholders of Risk From Cell Tower Radiation

Why Don't They Warn Families Living Near Cell Towers?



Verizon 10-K Report

"Our wireless business also faces personal injury and wrongful death lawsuits relating to alleged health effects of wireless phones or radio frequency transmitters. We may incur significant expenses in defending these lawsuits. In addition, we may be required to pay significant awards or settlements."



Crown Castle 10-K Report

"We cannot guarantee that claims relating to radio frequency emissions will not arise in the future or that the results of such studies will not be adverse to us...If a connection between radio frequency emissions and possible negative health effects were established, our operations, costs, or revenues may be materially and adversely affected. We currently do not maintain any significant insurance with respect to these matters."



AT&T 10-K Report

"In the wireless area, we also face current and potential litigation relating to alleged adverse health effects on customers or employees who use such technologies including, for example, wireless devices. We may incur significant expenses defending such suits or government charges and may be required to pay amounts or otherwise change our operations in ways that could materially adversely affect our operations or financial results."



T- MOBILE 10-K Report

"Our business could be adversely affected by findings of product liability for health or safety risks from wireless devices and transmission equipment, as well as by changes to regulations or radio frequency emission standards."

Cell Tower Companies Warn Shareholders of Risk From Cell Tower Radiation

Why Don't They Warn Families Living Near Cell Towers?



AMERICAN TOWER®

NOKIA
CONNECTING PEOPLE



Qualcomm



ERICSSON

American Tower 10-K

"If a scientific study or court decision resulted in a finding that radio frequency emissions pose health risks to consumers, it could negatively impact our tenants and the market for wireless services, which could materially and adversely affect our business, results of operations or financial condition. We do not maintain any significant insurance with respect to these matters."

Nokia 10-K

"Although our products are designed to meet all relevant safety standards and other recommendations and regulatory requirements globally, we cannot guarantee we will not become subject to product liability claims or be held liable for such claims, which could have a material adverse effect on us."

Qualcomm 10-K

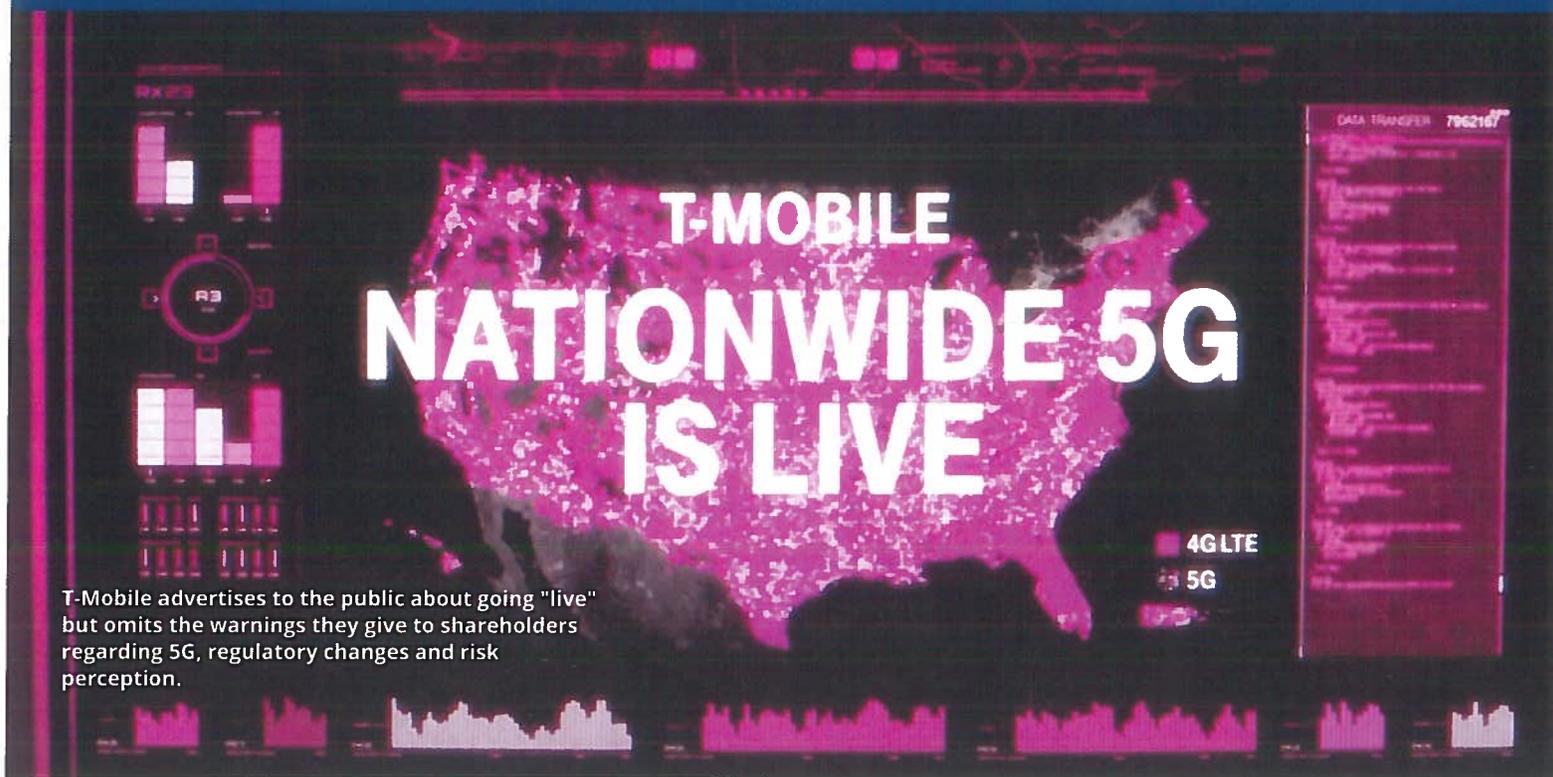
"If wireless handsets pose health and safety risks, we may be subject to new regulations, and demand for our products and those of our licensees and customers may decrease."

Ericsson Annual Report

"Any perceived risk or new scientific findings of adverse health effects from mobile communication devices and equipment could adversely affect us through a reduction in sales or through liability claims."

T-Mobile Warns of the Risk of 5G and Lawsuits

The Data on Risk Could Change, Impacting Cash Flow



T-Mobile advertises to the public about going "live" but omits the warnings they give to shareholders regarding 5G, regulatory changes and risk perception.

T-Mobile

T-Mobile 10-K Report 2/2023

"Negative public perception of, and regulations regarding, the perceived health risks relating to 5G networks could undermine market acceptance of our 5G services" (page 13)

"We, along with equipment manufacturers and other carriers, are subject to current and potential future lawsuits **alleging adverse health effects arising from the use of wireless handsets or from wireless transmission equipment such as cell towers.**"

"In addition, **the FCC has from time to time gathered data regarding wireless device emissions, and its assessment of the risks associated with using wireless devices may evolve based on its findings.** Any of these allegations or changes in risk assessments could result in customers purchasing fewer devices and wireless services, could result in significant legal and regulatory liability, and could have a material adverse effect on our business, reputation, financial condition, cash flows and operating results." (T-Mobile 10-K Report page 21)



A 2000 Ecolog Institute Report commissioned by T-Mobile and DeTeMobil Deutsche Telekom MobilNet recommended an RF exposure limit 1000x lower than the FCC's current power density limit after reviewing the research on biological effects, including impacts to the immune system, central nervous system, hormones, cancer, neurotransmitters and fertility

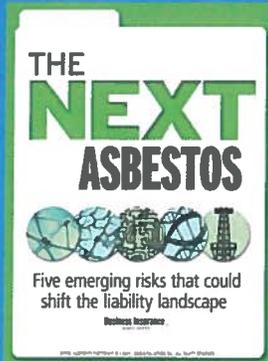
This PDF is hyperlinked. For more on legal liability issues go to ehtrust.org

ENVIRONMENTAL HEALTH TRUST | EHTRUST.ORG

**ENVIRONMENTAL
HEALTH TRUST**

5G, CELL TOWERS AND WIRELESS

LEGAL & LIABILITY ISSUES SHAREHOLDER WARNINGS



"Some research has shown biological effects from lower -level "non thermal" exposure and people exposed at lower levels have reported headaches, dizziness, nausea, mood disorders, mental slowing and memory loss."

***Business Insurance White Paper,
The Next Asbestos: Five Emerging Risks
That Could Shift the Liability Landscape***

Insurance Authorities Rate 5G as "High Risk."

5G mobile networks are classified as a "high," "off-the-leash" risk. "Existing concerns regarding potential negative health effects from electromagnetic fields (EMF) are only likely to increase. An uptick in liability claims could be a potential long-term consequence" and "as the biological effects of EMF in general and 5G in particular are still being debated, potential claims for health impairments may come with a long latency."
— Swiss Re Institute (2019)

Insurance Companies Have Electromagnetic Field Exclusions As the Industry Standard

"Electromagnetic field exclusions" are clear and common in most insurance companies. It is applied as a market standard. This exclusion serves to exclude cover for illnesses caused by long-term EMF (non-ionizing radiation) exposure." — Complete Markets

"Exclusions: This insurance does not apply to: Bodily injury, personal injury, advertising injury, or property damage arising directly or indirectly out of, resulting from, caused or contributed to by electromagnetic radiation, provided that such loss, cost or expense results from or is contributed to by the hazardous properties of electromagnetic radiation."
— Portland Oregon Public School Insurance (page 30)

Insurance Plans Not Only Exclude EMF Damages, But Some Even Exclude Defending Decision Makers From Actions

"This policy does not apply to and we will not provide a defense for: a. bodily injury... arising out of ... exposure to or contact with electromagnetic radiation... b. costs of abatement .. of EMF" or c. any supervision, instruction, recommendation, warning or advice given or which should have been given in connection with a or b. above."- City of Ann Arbor Michigan Insurance Policy page 14.

Wireless Companies Rank EMF as a Risk with High Impact

"Electro-magnetic signals emitted by mobile devices and base stations may be found to pose health risks, with potential impacts including: changes to national legislation, a reduction in mobile phone usage or litigation."
— Vodaphone 2017 Report ranks EMF as a "Principal Risk with "High" impact.

Wireless Companies Warn Shareholder About Risk But Not People Living Near Their Wireless Infrastructure

Crown Castle says:

"We cannot guarantee that claims relating to radio frequency emissions will not arise in the future or that the results of such studies will not be adverse to us...If a connection between radio frequency emissions and possible negative health effects were established, our operations, costs, or revenues may be materially and adversely affected. We currently do not maintain any significant insurance with respect to these matters."

Wireless Companies Define Pollution in Their Own Policies as Including EMFs, Microwaves and Non-ionizing Radiation.

Verizons Total Mobile Protection Plan says: "Pollution" is defined as "any solid, liquid, gaseous, or thermal irritant or contaminant including smoke, vapor, soot, fumes, acid, alkalis, chemicals, artificially produced electric fields, magnetic field, electromagnetic field, sound waves, microwaves, and all artificially produced ionizing or non-ionizing radiation and/or waste."

You work best when your tech works too.

Total Mobile Protection for Business



Applicable for Business customers outside of New York. New York customers, please see the Total Mobile Protection for Business brochure for New York.



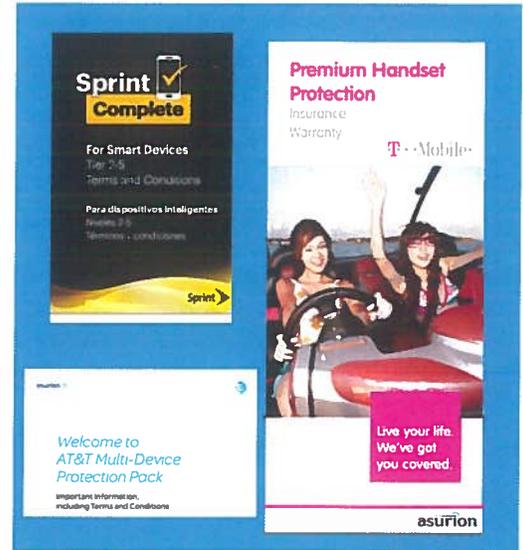
Verizon Total Mobile Protection Plan Defines Non-ionizing Radiation as "Pollution"

16. Pollution

The discharge, dispersal, seepage, migration or escape of pollutants. Pollutants means any solid, liquid, gaseous, or thermal irritant or contaminant including smoke, vapor, soot, fumes, acid, alkalis, chemicals, artificially produced electric fields, magnetic field, electromagnetic field, sound waves, microwaves, and all artificially produced ionizing or non-ionizing radiation and/or waste. Waste includes materials to be recycled, reconditioned or reclaimed.

AT&T, Sprint and T-Mobile also have similar "pollution" definitions and they refuse to cover damages.

Click on image to view the policy.



Insurance Companies Exclude EMF As Industry Standard

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ELECTROMAGNETIC RADIATION EXCLUSION

This endorsement modifies insurance provided under the following:

- GENERAL LIABILITY COVERAGE PART
- PUBLIC RISK GENERAL LIABILITY RETAINED LIMIT COVERAGE FORM
- LAW ENFORCEMENT COVERAGE PART
- LAW ENFORCEMENT LIABILITY RETAINED LIMIT COVERAGE FORM
- PUBLIC OFFICIALS COVERAGE PART
- PUBLIC OFFICIALS LIABILITY RETAINED LIMIT COVERAGE FORM
- EMPLOYMENT PRACTICES LIABILITY COVERAGE PART
- EMPLOYMENT PRACTICES LIABILITY RETAINED LIMIT COVERAGE FORM

The following **Exclusion** is added:

This policy does not apply to and we will not provide a defense for:

- a. "Bodily injury," "property damage", "personal and advertising injury", "employee benefits wrongful acts", "personal injury", "law enforcement wrongful acts", "public officials wrongful acts", "educator's legal wrongful acts", or "employment practices wrongful acts" arising out of, or which result in, the actual, alleged, threatened, perceived, latent, sudden and accidental or incidental exposure to or contact with electromagnetic radiation in any form, from any source.
- b. The costs of abatement or mitigation of:
 - (1) Electromagnetic radiation; or
 - (2) Exposure to electromagnetic radiation.
- c. Any supervision, instruction, recommendation, warning or advice given or which should have been given in connection with a. or b. above.

Electromagnetic radiation includes but is not limited to, magnetic energy, waves, fields or forces generated, produced, transmitted or maintained by the charges, currents, frequencies, energy or forces of electricity that is generated, flowing or otherwise transmitted through or via the medium, methods and equipment designed to generate, produce, distribute, transport or transmit the electrical charges, currents, frequencies, energy or forces.

Select Page



SMALL CELLS, MINI CELL TOWERS, WIRELESS FACILITIES AND HEALTH: LETTERS FROM SCIENTISTS ON THE HEALTH RISK OF 5G

Sep 20, 2017 | 0 comments



2020 Consensus Statement of UK and International Medical and Scientific Experts 3500 Medical Doctors

“Hundreds of peer-reviewed scientific studies have demonstrated adverse biological effects occurring in response to a range of NIR exposures below current safety guidelines; however emissions continue to escalate.

- [Press release online at PHIRE here](#)
- [See list of signatories which includes medical organizations of over 3500 members.](#)
- [Read full Consensus Statement on 5G and Wireless](#)
- [Sign statement here](#)

Medical evidence of harm has now reached the critical mass necessary to inspire the medical community to step out of their usual roles, stand up and speak out regarding their concerns

Over 400 Doctors: Scientific Appeal to Halt 5G To the European Commission

- Over 400 scientists and doctors from 35 countries.
- *“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 Scientific Appeal on 5G To the European Commission](#)

EMF Scientists Appeal

The EMF Scientists are over 257 reputable scientists from 44 countries who have peer reviewed publications on electromagnetic fields who made a 2015 appeal to the United Nations and all member States in the world to encourage the World Health Organization “to exert strong leadership in fostering the development of more protective EMF guidelines, encouraging precautionary

measures, and educating the public about health risks, particularly risk to children and fetal development.”

“The International EMF Scientist Appeal serves as a credible and influential voice from EMF (electromagnetic field) scientists who are urgently calling upon the United Nations and its sub-organizations, the WHO and UNEP, and all U.N. Member States, for greater health protection on EMF exposure.”

- Read the EMF Scientists Testimony to the FCC
- Read the 2015 EMF Scientist Appeal and see the long list of signatories here
- Read the August 18, 2017 Statement on 5G “We recommend that, in keeping with the U.N. Guiding Principles on Business and Human Rights, to “Protect, Respect and Remedy”, 5G technologies must be subjected to an independent health and safety assessment before they are launched.”
- Read the published article on the EMF Scientist Appeal in the International Journal of Oncology here

Switzerland Doctors for the Environment

Recommendations to the federal authorities include more stringent RF regulations due to regulatory gaps especially in relation to SAR limits for phones and wireless devices. They recommend the federal government educate the public on how to reduce exposure.

Regarding 5G deployment they issued a [position paper](#) calling for precaution, a moratorium on millimeter wave frequency bands and they recommended fiber optic connections to homes, schools and businesses with cable connections inside.

The Italian Association of Doctors for the Environment

[Appealed to the government](#) to maintain strict RF thresholds for the country.

“No technical or economic reason can justify a health risk to population and biodiversity. Raising the limit to 61 V/m means ignoring the health reasons which demonstrate the presence of non-thermal biological effects, even very serious ones, up to tumor forms, caused by the frequencies already in use. “

Joined onto the [2020 Consensus Statement](#) on the risks of exposure to radio frequencies in general and 5G in particular was recently drawn up and circulated by 13 international medical associations, including ISDE Italia. An Italian translation prepared by ISDE Italia is available at the link: <https://tinyurl.com/y7mgcrhj>

- [The Italian Association of Doctors for the Environment](#)

130 Doctors in Chile

A [letter](#) signed by 135 health professionals across Chile has requested a moratorium on the deployment of 5G technology until it is certain that it does not pose a risk to human health and the environment. A [Chile 5G Appeal](#) has been launched in support of the petition.

[READ THE LETTER.](#)

60 Officials in France

A petition addressed to Prime Minister Jean Castex, signed by over sixty elected officials including Jean-Luc Mélenchon (deputy of Bouches-du-Rhône (FI)), Manon Aubry (European deputy (FI)) or Michèle Rubirola (mayor of Marseille) who urged the government to decide on a moratorium on the deployment of 5G. The petition references the increase in wireless exposure and the need to assess environmental effects before deploying 5G.

“We, mayors and elected officials are immediately proposing a moratorium on the deployment of 5G at least until the summer of 2021. During this moratorium, we are asking for a decentralized democratic debate on 5G and on digital uses. We ask the municipalities for the right to subsidiarity concerning the application of the precautionary principle.” [Read more.](#)

400 US Doctors and Medical Professionals Submit Opposition to 5G to US Government FCC

Over 400 medical professionals have told the FCC it was wrong not to update its RF human exposure guidelines. The letter was signed by doctors, both medical

and PHDs, nurses and others submitted as comment on a recent FCC decision 19-226.

In the letter to the FCC, dated June 17, the medical professionals said the FCC “completely ignores the documented adverse health effects that can occur at the FCC’s current radiofrequency (RF) exposure limits, much less those that may occur at the expanded range of frequencies contemplated in the proposed rule.”

“Americans are entitled to know the full extent of any potential health risks associated with exposure to RF microwave radiation, particularly at this time when wireless companies are busy installing hundreds of thousands of new wireless antennas in close proximity to homes and apartments. The determination of risk can best be evaluated from properly conducted, independent studies. The alternative of waiting for decades to learn whether or not these exposures increase disease rates in human populations and in the natural world is a dangerous and irresponsible strategy.”

- [Over 400 Medical Professionals Letter](#)

2019 Resolution: US Doctors and Experts wrote President Trump calling for a halt to 5G

“We join with the thousands of doctors, scientists and health care providers worldwide who have recently issued appeals for urgent action on 5G to protect public health. The rapidly growing list includes the [International EMF Scientist Appeal](#), [Appeal to the European Union](#), [Belgium Doctors Appeal](#), [Canadian Doctors](#), [Cyprus Medical Association](#), [Physicians of Turin, Italy](#), the [German Doctors Appeal](#), [International Appeal to Stop 5G on Earth and Space](#) and the [International Society of Doctors for the Environment](#).

We call for a moratorium on 5G and any further wireless antenna densification until potential hazards for human health and the environment have been fully investigated by scientists independent from the wireless industry.” –[December 11, 2019](#),

[Read the full US Doctors and Experts National 5G Resolution](#)

Scientific Appeals by Scientists and Doctors and Experts on 5G and Wireless Antennas

5G Appeal to Stop Deployment on Earth and Space

- There are 201,383 signatories from 202 nations and territories as of February 14th, 2020; Scientists (4,503), Engineers (8,036), Medical Doctors (2,593), Nurses (4,177), Psychologists, Psychotherapists and Social Workers (9,663), Doctors of Naturopathy, Homeopathy, Ayurveda and Medical Qigong (2,777), Doctors of Oriental Medicine (770), Chiropractors (412), Dentists (438), Pharmacists (552), Architects and Builders (3,137), Building Biologists (271), Veterinarians (344), Beekeepers (657), Other Professions (54,148), Citizens (78,082), Organizations (1,835)
- 5G Appeal to Stop Deployment on Earth and Space

Alliance of Nurses for Healthy Environments

“The Alliance of Nurses for Healthy Environments is made up of nurses from all over the US working in the areas of public health, environmental health, clinical practice, research and academics. As medical and public health professionals, we are writing to express our opposition to the above captioned rule. We believe the Commission has failed adequately consider the established and newly emerging science on RF microwave radiation and its impact on human health.”

“Is the FCC engaged in a conscious effort to disregard science to facilitate the rapid deployment of new technologies to benefit industry at the risk of our health and well-being? Asserting that there is no harm is misleading at best. The commission has a very important responsibility to protect the health and safety of the public. ..Proceed with caution and put public health first.”

Alliance of Nurses for Healthy Environments

Over 400 Medical Professionals to the US FCC

Over 400 Medical Professionals Letter

“Americans are entitled to know the full extent of any potential health risks associated with exposure to RF microwave radiation, particularly at this time when wireless companies are busy installing hundreds of thousands of new

wireless antennas in close proximity to homes and apartments. The determination of risk can best be evaluated from properly conducted, independent studies. The alternative of waiting for decades to learn whether or not these exposures increase disease rates in human populations and in the natural world is a dangerous and irresponsible strategy.”

2020 German Environmental Organization Bund

Telecom Paper, [Bund signs petition to stop 5G in Hamburg](#), Thursday 13 February 2020

- “The electro-smog working group of German environmental organisation Bund has delivered a petition with over 6.000 signatures to the First Mayor of Hamburg, Peter Tschentscher, opposing construction of a 5G network in the city. Bund believes that the expansion of 5G should take place only after testing the impact of the new technology on health and the environment”
- [Hamburg – The environmental organization BUND is calling for an expansion stop for the latest 5G mobile network in Hamburg](#)
“Without an assessment of health and environmental compatibility, the infrastructure should not be expanded, said regional manager Manfred Braasch in Hamburg. In addition, the mobile network is currently being expanded without the required technology assessment. The BUND handed over his demands with 6000 signatures to the mayor’s office of Mayor Peter Tschentscher (SPD).”

2019 German Doctors Delegation

- 70 doctors from Baden-Württemberg have signed the open letter to Prime Minister Kretschmann. The doctors’ demand on Kretschmann is to minimize exposure to electromagnetic fields.
- [Stuttgarter Zeitung: Doctors protest against 5G mobile communications](#)
- [Stuttgarter Nachrichten: Doctors protest against 5G mobile communications](#)
- [TV report in Regio TV Stuttgart](#)
- The study overview (review) “Effects of high-frequency radiation of mobile phones and wireless devices on health and well-being” in German translation is available on the website of diagnostose: funk as a PDF download:

2019 Hippocrates Electrosmog Appeal of Belgium

- The Appeal has been signed by over 434 medical doctors, nurses and health professionals in Belgium.
- “Faced with the massive and reckless deployment of wireless technologies, we health professionals are asking the government to apply the precautionary principle in order to protect the population and more particularly the most vulnerable groups, including pregnant women. and the children.”
- Read the “[Hippocrates Electrosmog Appeal of Belgium](#)”
- Read News Story July 2020 LeLibre: [DNA damage, brain cancer: 434 doctors and 900 Belgian health professionals sound the alarm on 5G](#)
LaLibre.be, Apr 29, 2020; Updated Apr 30, 2020 (Google translation from French)

2019 US Doctors and Experts National 5G Resolution

- *An Urgent Call for a Moratorium on 5th Generation Wireless Technologies Pending Safety Testing*
- We join with the thousands of doctors, scientists and health care providers worldwide who have recently issued appeals for urgent action on 5G to protect public health. The rapidly growing list includes the [International EMF Scientist Appeal](#), [Appeal to the European Union](#), [Belgium Doctors Appeal](#), [Canadian Doctors](#), [Cyprus Medical Association](#), [Physicians of Turin, Italy](#), the [German Doctors Appeal](#), [International Appeal to Stop 5G on Earth and Space](#) and the [International Society of Doctors for the Environment](#).
- We call for a moratorium on 5G and any further wireless antenna densification until potential hazards for human health and the environment have been fully investigated by scientists independent from the wireless industry.
- *December 11, 2019, [US Doctors and Experts National 5G Resolution](#)*

2019 Pancyprian Medical Association and Cyprus National Committee on the Environment and Child Health.

2019 Position Paper on 5G of the Pancyprian Medical Association and Cyprus National Committee on the Environment and Child Health.

- The Pancyprian Medical Association and Cyprus National Committee on the Environment and Child Health position paper on 5G is entitled “[The Risks to](#)

[Public Health from the Use of the 5G Network](#)” and was sent to the Cyprus Parliamentary Committees on Environment and Health. The position paper is based on the historic Nicosia Declaration of 2017.

- The position paper emphasizes the lack of safety studies, the increase in exposure and the potential interactions of the network with other telecommunication networks. The paper also highlights the lack of a reliable method to measure the radiation levels in real world situations- an issue that was raised in the 2019 European Parliament Report [“5G Deployment State of Play in Europe, USA and Asia”](#) which states that, “ the problem is that currently it is not possible to accurately simulate or measure 5G emissions in the real world.”
- [Read Press Release on the 5G Position Paper](#)
-

2018: The European Scientific Committee on Health, Environmental and Emerging Risks (SCHEER) Report

- The report identified 14 emerging issues to bring to the attention of the Commission services including 5G, E-cigarette and chronic diseases. They prioritized 5G impact as “high” and concludes that “the lack of clear evidence to inform the development of exposure guidelines to 5G technology leaves open the possibility of unintended biological consequences.”
- [Read the SCHEER statement “Potential effects on wildlife of increases in electromagnetic radiation“](#)

2018: International Society of Doctors for Environment

International Society of Doctors for Environment Declaration on 5G

- “An appeal for a standstill in the respect of the precautionary principle”
- “Thus, in the respect of the precautionary principle and of the WHO principle “health in all policies”, we believe suitable the request of a standstill for the “5G experimentations” throughout Europe...”
- [5G ISDE Appeal link](#)

EMF Scientist Appeal

- 253 Scientists as of May 1, 2020

07/17/23 • BIG TECH › VIEWS

Children Most at Risk of Heart, Brain Damage From Wireless Radiation

Exposure to radiofrequency signals, especially from cellphones and other devices held close to the body, pose significant risks to our health. Because the effects may not be seen for years or decades, critically needed prevention measures — especially for children — are not yet common practice. Here are some things we can all do to reduce our exposure.

By Dr. Joseph Mercola

Miss a day, miss a lot. *Subscribe to The Defender's Top News of the Day. It's free.*

Story at a glance:

- According to many experts, chronic, heavy exposure to wireless radiation is likely to have severe repercussions for our health, especially that of children, who are now being exposed even before birth.
- While a number of different devices contribute to the overall radiation burden, those kept closest to your body on a regular basis, such as your cellphone, are of greatest concern.
- Your body has natural electromagnetic fields (EMFs), as many of your bodily processes involve the transmission of electric signals, and external interference can disrupt those signals.
- Inside every cell in your body are mitochondria, the power plants of your cell, and they are adversely impacted by EMFs, resulting in mitochondrial and cellular dysfunction.
- Two organs that are most vulnerable to outside radiofrequency (RF) interferences are your heart and brain. Both also have the highest density of voltage-gated calcium channels, which are inappropriately activated by EMFs, thereby causing most of the damage associated with EMF exposure.

Most people today live in a sea of RF, emitted from wireless technologies of all kinds, from routers to smartphones, tablets, baby monitors, TVs, appliances, smart meters and more.

In the featured ABC program “Wi-Fried,” (video below) originally aired in 2016, Maryanne Demasi, Ph.D., investigates the alleged safety of mobile devices.

According to many experts, chronic, heavy exposure could have severe repercussions for our health, especially that of children, who are now being exposed even before birth.

As noted by Devra Davis, Ph.D., an epidemiologist and author of the book, “Disconnect: The Truth About Cell Phone Radiation,” children have never before been exposed to this level of pulsed radiation, and it’s still too early to determine the exact extent of the harm.

Still, mounting evidence suggests harm is indeed occurring, so it would be foolish to wait until we’re in the midst of a global catastrophe.



"Wi-fried" on ABC 2016

damien curtis

29:13

External interference can disrupt natural bioelectric signals

While a number of different devices contribute to the overall radiation burden, those kept closest to your body on a regular basis, such as your cellphone, are of greatest concern.

Worldwide, there are more than 6 billion cellphone subscriptions. In other words, we're rapidly nearing total saturation, where every single person on the planet has one of these devices.

Many of these mobile phones are smartphones, with apps that frequently receive and transmit pulsed electromagnetic signals.

The human body also has natural EMFs, as many of your bodily processes involve the transmission of electric signals, and as noted by Demasi, "External interference can disrupt those signals."

In a 2016 article, Jerry Phillips, Ph.D., a biochemist and director of the Excel Science Center at the University of Colorado, explained how living cells react to RF radiation:

"The signal couples with ... cells, although nobody really knows what the nature of that coupling is. Some effects of that reaction can be things like movement of calcium across membranes, the production of free radicals or a change in the expression of genes in the cell.

"Suddenly important proteins are being expressed at times and places and in amounts that they shouldn't be, and that has a dramatic effect on the function of the cells. And some of these changes are consistent with what's seen when cells undergo conversion from normal to malignant."

When you consider that your body runs on bioelectricity, it's easier to understand how and why biological damage from wireless phones might occur.

For starters, your body has natural EMFs, as many of your bodily processes involve the transmission of electric signals, and external interference can disrupt those signals.

In the past few years, it's become increasingly clear that mitochondrial dysfunction is at the root of most chronic diseases, so in terms of public health, the effects of chronic EMF exposure may be far more profound than suspected.

We may not only face an avalanche of brain cancer in the coming decades but also heart disease, neurological disease and infertility.

Your heart and brain are most susceptible to EMF damage

Two of the organs that are the most vulnerable to outside RF interference are your heart and your brain. Both of these organs also have the highest density of voltage-gated calcium channels.

Research by Martin Pall, Ph.D., Professor Emeritus of biochemistry and basic medical sciences at Washington State University, suggests voltage-gated calcium channels are activated by low-intensity EMFs such as those emitted from cellphones, triggering an excessive influx of calcium into the cell.

The excess intracellular calcium and the increased calcium signaling appear to be responsible for most if not all of the biological effects associated with EMF exposure, which include an increase in:

- Neuropsychiatric disorders and diseases such as anxiety, depression, ADHD, autism and Alzheimer's
- Hormonal effects
- Cardiac effects
- Chromosomal breaks
- Impaired fertility especially in men
- Oxidative stress
- Changes in calcium signaling
- Cellular DNA damage
- Breakdown of the blood-brain barrier
- Cancer
- Melatonin depletion
- Sleep disruption

Research confirms EMF-induced health effects

As early as 1990, before there even was a consumer cellphone industry, at least two dozen epidemiological studies on humans indicated a link between EMF and/or RF and serious health problems, including childhood leukemia.

More recently, two government-funded studies — one on mice and one on rats — found evidence of heart tumors and damage to the brain and DNA.

This \$25 million research, conducted by the National Toxicology Program — an interagency research program housed at the National Institute of Environmental Health Sciences — is said to be the most extensive to date, and it confirms that the heart and brain are key areas affected by high, chronic EMF exposure.

Earlier research by Allan Frey, Office of Naval Research, also revealed cellphone radiation weakens cell membranes, including your blood-brain barrier, placing your brain at further increased risk by allowing systemic toxins to enter.

Male testes are a third area with high voltage-gated calcium channel density, and indeed, studies have linked EMF exposure to male fertility problems as well.

Cellphone radiation has been linked to a reduction in sperm motility and viability, and Wi-Fi-equipped laptops have been linked to sperm DNA fragmentation after just four hours of use.

Disturbingly, most people will carry their cellphones either in their breast pocket or pants pocket, effectively radiating the most sensitive parts of their body — their heart and reproductive organs. Then, when talking on the phone, they will place it to their ear, exposing their brain.

Pregnant women are also exposing their unborn children to harmful radiation when carrying a cellphone on their body, or using it near their body.

According to research, prenatal exposure to power-frequency fields can nearly triple a pregnant woman's risk of miscarriage.

Several other studies have also linked prenatal EMF exposure to an increased risk of miscarriage.

Why we're not seeing dramatic increases in brain cancer

With regard to brain cancer, it's important to remember that brain cancer typically has a long latency period. According to Davis, it took 40 years before the brain cancer rate in the Japanese population spiked after the atomic bomb was dropped on Hiroshima.

Compared to radioactive radiation, RF is likely far less carcinogenic, but the fact that we have not seen a dramatic increase in brain cancer rates as of yet is by no means proof that flooding your brain with RFs is harmless.

It simply means we haven't been using cellphones long enough yet. In my view, it seems really foolish to make such a gamble with entire generations of people.

Davis also points out that if you want to get an indication of how cellphone use is influencing brain cancer rates, you have to look at the types of brain tumors that have become predominant, and the groups in which they occur.

In more recent years, we have in fact seen a statistically significant uptick in brain cancer in younger people and children. We've also seen an increase in tumors situated near the ear on the side people hold their phones.

Most people breach the safety limits of their cellphones

Also noted in the featured video, anytime you carry your phone on your body and it is not in airplane mode, you are, breaching the safety limits of your phone.

This safety limit, known as the specific absorption rate (SAR), is typically buried in the legal section of your phone but will state that you need to keep the phone at a specified distance from your body to prevent overexposure and potential heat damage.

Demasi's cellphone specified a safety limit of 10 millimeters, meaning she would need to keep it at least 1 centimeter from her body at all times.

So, it's important to realize that your cellphone no longer complies with safety regulations once it's placed in your pocket or bra.

It's also worth noting that the Federal Communications Commission bases its thermal safety standards on a model that does not apply to the population at large, especially not children.

The standards are based on a model called "standard anthropomorphic man," a model much larger than the average person. The larger the body, the shallower the penetration of the radiation, so SAR levels are likely too generous for most people.

The experts interviewed believe it's safe to say that most people breach the SAR limits of their phones on a daily basis, possibly exposing themselves to heat-induced cell damage.

However, it's important to realize that the SAR value of your phone is worthless when it comes to assessing the safety of your phone, as the most significant damage is not caused by heating. In reality, there's no such thing as a safe cellphone, as they all emit EMFs.

The only way to make it safe is to turn it off, or keep it in airplane mode, which suspends RF signal transmissions. Pall calculates that the safety standards based on thermal damage, not molecular biology, are off by a factor of 7 million.

Also noted in the video is that safety standards are based on the decades-old and now-debunked theory that no damage can occur unless the tissue is heated, but mounting evidence strongly suggests this simply isn't true, and a number of different mechanisms of harm have been presented in the scientific literature.

Two crucial ways EMFs harm your health

There's even evidence suggesting that radiation affects your microbiome, turning what might otherwise be beneficial microbes pathogenic. This too can have far-ranging health effects, since we now know your microbiome plays an important role in health.

Importantly, while the mechanisms may differ, the end result is often the same.

In short, EMFs:

1. Increase oxidative stress, which can damage cell membranes and proteins, and break DNA bonds.

2. Decrease ATP — the energy currency in your body, without which your cells cannot function properly.

Protecting Yourself and Your Children From Excessive EMF

As of September 2018, France will impose a complete ban on cellphone use by primary and secondary school students during school hours.

Students will not be permitted to use their phones even during breaks, lunch or between classes. California also issued consumer guidance on how to lower cellphone radiation exposure (after initially trying to cover up the hazards).

Russia has also implemented laws to minimize Wi-Fi exposure in schools, and countries like Switzerland, Italy, Austria, Luxembourg, Bulgaria, Poland, Hungary, Israel and China have RF exposure limits that are up to 10,000 times lower than the U.S.

In my mind, EMF exposure is unquestionably a significant health hazard that needs to be addressed if you're concerned about your health.

Schools, especially, really should take a step back and begin to implement strategies to protect students. There's simply no reason to flood children with wireless signals all day long.

Also in the featured video, an Australian school simply installed an on/off switch on the router in each classroom. Unless online access is required for a particular lesson, the Wi-Fi is turned off.

If you have Wi-Fi in your home, I would recommend implementing a similar strategy at home.

Helpful strategies to reduce your EMF exposure

Here are several other suggestions that will also help reduce your EMF exposure:

- Connect your desktop computer to the internet via a wired Ethernet connection and be sure to put your desktop in airplane mode. Also avoid wireless keyboards, trackballs, mice, game systems, printers and portable house phones and opt for wired versions.
- If you must use Wi-Fi, shut it off when not in use, especially at night when you are sleeping. Ideally, work toward hardwiring your house so you can eliminate Wi-Fi altogether. If you have a notebook without any Ethernet ports, a USB Ethernet adapter will allow you to connect to the internet with a wired connection.
- Shut off the electricity to your bedroom at night. This typically works to reduce electrical fields from the wires in your wall unless there is an adjoining room next to your bedroom. If that is the case, use an EMF meter to determine if you also need to power down the adjacent room.
- Use a battery-powered alarm clock, ideally one without any light. I use a talking clock for the visually impaired.
- If you still use a microwave oven, consider replacing it with a steam convection oven, which will heat your food as quickly and far more safely.

- Avoid using “smart” appliances and thermostats that depend on wireless signaling. This would include all-new “smart” TVs. They are called smart because they emit a Wi-Fi signal, and unlike your computer, you cannot shut the Wi-Fi signal off. Consider using a large computer monitor as your TV instead, as they don’t emit Wi-Fi.
- Refuse smart meters as long as you can, or add a shield to an existing smart meter, some of which have been shown to reduce radiation by 98% to 99%.
- Consider moving your baby’s bed into your bedroom instead of using a wireless baby monitor. Alternatively, use a hard-wired monitor.
- Replace compact fluorescent light bulbs with incandescent bulbs. Ideally, remove all fluorescent lights from your house. Not only do they emit unhealthy light, but more importantly, they will actually transfer current to your body just by being close to the bulbs.
- Avoid carrying your cellphone on your body unless in airplane mode and never sleep with it in your bedroom unless it is in airplane mode. Even in airplane mode, it can emit signals, which is why I put my phone in a Faraday bag.
- When using your cellphone, use the speaker phone and hold the phone at least 3 feet away from you. Seek to radically decrease your time on the cellphone. I typically use my cellphone for less than 30 minutes a month, and mostly when traveling. Instead, use VoIP software phones that you can use while connected to the internet via a wired connection.

Originally published by Mercola. This article is a reprint. It was originally published on March 31, 2018.

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the views of Children's Health Defense.

SUGGEST A CORRECTION



Dr. Joseph Mercola

Dr. Joseph Mercola is the founder of Mercola.com.

Sign up for free news and updates from Children’s Health Defense. CHD focuses on legal strategies to defend the health of our children and obtain justice for those injured. We can't do it without your support

Republishing Guidelines



INTERNATIONAL APPEAL

Stop 5G on Earth and in Space

Sign the Appeal: www.5gSpaceAppeal.org

To the UN, WHO, EU, Council of Europe and governments of all nations,

We the undersigned scientists, doctors, environmental organizations and citizens from 204 countries and territories, urgently call for a halt to the deployment of the 5G (fifth generation) wireless network, including 5G from space satellites. 5G will massively increase exposure to radio frequency (RF) radiation on top of the 2G, 3G and 4G networks for telecommunications already in place. RF radiation has been proven harmful for humans and the environment. The deployment of 5G constitutes an experiment on humanity and the environment that is defined as a crime under international law.

Executive summary

Telecommunications companies worldwide, with the support of governments, are poised within the next two years to roll out the fifth-generation wireless network (5G). This is set to deliver what is acknowledged to be unprecedented societal change on a global scale. We will have “smart” homes, “smart” businesses, “smart” highways, “smart” cities and self-driving cars. Virtually everything we own and buy, from refrigerators and washing machines to milk cartons, hairbrushes and infants’ diapers, will contain antennas and microchips and will be connected wirelessly to the Internet. Every person on Earth will have instant access to super-high-speed, low-latency wireless communications from any point on the planet, even in rainforests, mid-ocean and the Antarctic.

What is not widely acknowledged is that this will also result in unprecedented *environmental* change on a global scale. The planned density of radio frequency transmitters is impossible to envisage. In addition to millions of new 5G base stations on Earth and 20,000 new satellites in space, 200 billion transmitting objects, according to estimates, will be part of the Internet of Things by 2020, and one *trillion* objects a few years later. Commercial 5G at lower frequencies and slower speeds was deployed in Qatar, Finland and Estonia in mid-2018. The rollout of 5G at extremely high (millimetre wave) frequencies is planned to begin at the end of 2018.

Despite widespread denial, the evidence that radio frequency (RF) radiation is harmful to life is already overwhelming. The accumulated clinical evidence of sick and injured human beings, experimental evidence of damage to DNA, cells and organ systems in a wide variety of plants and animals, and epidemiological evidence that the major diseases of modern civilization—cancer, heart disease and diabetes—are in large part caused by electromagnetic pollution, forms a literature base of well over 10,000 peer-reviewed studies.

International Appeal: Stop 5G on Earth and in Space

If the telecommunications industry's plans for 5G come to fruition, no person, no animal, no bird, no insect and no plant on Earth will be able to avoid exposure, 24 hours a day, 365 days a year, to levels of RF radiation that are tens to hundreds of times greater than what exists today, without any possibility of escape anywhere on the planet. These 5G plans threaten to provoke serious, irreversible effects on humans and permanent damage to all of the Earth's ecosystems.

Immediate measures must be taken to protect humanity and the environment, in accordance with ethical imperatives and international agreements.

(Note: References are provided as [hyperlinks](#) and endnotes.)

5G will result in a massive increase in inescapable, involuntary exposure to wireless radiation

Ground-based 5G

In order to transmit the enormous amounts of data required for the Internet of Things (IoT), 5G technology, when fully deployed, will use millimetre waves, which are poorly transmitted through solid material. This will require every carrier to install base stations [every 100 metres](#)¹ in every urban area in the world. Unlike previous generations of wireless technology, in which a single antenna broadcasts over a wide area, 5G base stations and 5G devices will have [multiple antennas arranged in "phased arrays"](#)^{2,3} that work together to emit focused, steerable, laser-like beams that track each other.

Each 5G phone will contain dozens of tiny antennas, all working together to track and aim a narrowly focused beam at the nearest cell tower. The US Federal Communications Commission (FCC) [has adopted rules](#)⁴ permitting the effective power of those beams to be as much as 20 watts, ten times more powerful than the levels permitted for current phones.

Each 5G base station will contain hundreds or thousands of antennas aiming multiple laser-like beams simultaneously at all cell phones and user devices in its service area. This technology is called "multiple input multiple output" or MIMO. FCC rules permit the effective radiated power of a 5G base station's [beams to be as much as 30,000 watts](#) per 100 MHz of spectrum,² or equivalently 300,000 watts per GHz of spectrum, tens to hundreds of times more powerful than the levels permitted for current base stations.

Space-based 5G

At least five companies⁵ are proposing to provide 5G from space from a combined 20,000 satellites in low- and medium-Earth orbit that will blanket the Earth with powerful, focused, steerable beams. Each satellite will emit millimetre waves with an effective radiated power of [up to 5 million watts](#)⁶ from thousands of antennas arranged in a phased array. Although the energy reaching the ground from satellites will be less than that from ground-based antennas, it will irradiate areas of the Earth not reached by other transmitters and will be additional to ground-based 5G transmissions from billions of IoT objects. Even more importantly, the satellites will be located in the Earth's magnetosphere, which exerts a significant influence over the electrical

International Appeal: Stop 5G on Earth and in Space

properties of the atmosphere. *The alteration of the Earth's electromagnetic environment may be an even greater threat to life than the radiation from ground-based antennas (see below).*

Harmful effects of radio frequency radiation are already proven

Even before 5G was proposed, [dozens of petitions and appeals](#)⁷ by international scientists, including the [Freiburger Appeal](#) signed by over 3,000 physicians, called for a halt to the expansion of wireless technology and a moratorium on new base stations.⁸

In 2015, [215 scientists from 41 countries](#) communicated their alarm to the United Nations (UN) and World Health Organization (WHO).⁹ They stated that “numerous recent scientific publications have shown that EMF [electromagnetic fields] affects living organisms at levels well below most international and national guidelines”. More than 10,000 peer-reviewed scientific studies demonstrate harm to human health from RF radiation.^{10,11} Effects include:

- [Alteration of heart rhythm](#)¹²
- [Altered gene expression](#)¹³
- [Altered metabolism](#)¹⁴
- [Altered stem cell development](#)¹⁵
- [Cancers](#)¹⁶
- [Cardiovascular disease](#)¹⁷
- [Cognitive impairment](#)¹⁸
- [DNA damage](#)¹⁹
- [Impacts on general well-being](#)²⁰
- [Increased free radicals](#)²¹
- [Learning and memory deficits](#)²²
- [Impaired sperm function and quality](#)²³
- [Miscarriage](#)²⁴
- [Neurological damage](#)²⁵
- [Obesity and diabetes](#)²⁶
- [Oxidative stress](#)²⁷

Effects in children include [autism](#),²⁸ [attention deficit hyperactivity disorder \(ADHD\)](#)^{29,30} and [asthma](#).³¹

Damage goes well beyond the human race, as there is abundant evidence of harm to diverse plant- and [wildlife](#)^{32,33} and laboratory animals, including:

- [Ants](#)³⁴
- [Birds](#)^{35,36}
- [Forests](#)³⁷
- [Frogs](#)³⁸
- [Fruit flies](#)³⁹
- [Honey bees](#)⁴⁰
- [Insects](#)⁴¹
- [Mammals](#)⁴²
- [Mice](#)^{43,44}
- [Plants](#)⁴⁵
- [Rats](#)⁴⁶
- [Trees](#)⁴⁷

Negative [microbiological](#) effects⁴⁸ have also been recorded.

The WHO's International Agency for Research on Cancer (IARC) concluded in 2011 that RF radiation of frequencies 30 kHz - 300 GHz are possibly [carcinogenic to humans \(Group 2B\)](#).⁴⁹ However, recent evidence, including the latest studies on cell phone use and brain cancer risks, indicate that [RF radiation is proven carcinogenic to humans](#)⁵⁰ and should now be classified as a "Group 1 carcinogen" along with tobacco smoke and asbestos.

Most contemporary wireless signals are pulse-modulated. Harm is caused by both the high-frequency carrier wave and the low-frequency pulsations.⁵¹

International Appeal: Stop 5G on Earth and in Space

The deployment of 5G satellites must be prohibited

The Earth, the ionosphere and the lower atmosphere form the global electric circuit⁵² in which we live. It is well established that [biological rhythms](#)—of humans,^{53,54} birds,⁵⁵ hamsters,⁵⁶ and spiders^{57,58}—are controlled by the Earth’s natural electromagnetic environment and that the well-being of all organisms depends on the stability of this environment, including the [electrical properties of the atmosphere](#).^{59,60,61,62} [Cherry](#), in a groundbreaking paper,⁶³ explained the importance of the [Schumann resonances](#)⁶⁴ and why ionospheric disturbances can alter blood pressure and melatonin and cause “cancer, reproductive, cardiac and neurological disease and death”.

These elements of our electromagnetic environment have already been altered by radiation from power lines. [Power line harmonic radiation](#)⁶⁵ reaches the Earth’s ionosphere and magnetosphere, where it is amplified by [wave-particle interactions](#).^{66,67} In 1985, Dr. Robert O. Becker warned that power line harmonic radiation had already changed the structure of the magnetosphere, and that the continued expansion of this effect “threatens the viability of all life on Earth”.⁶⁸ The placement of tens of thousands of satellites directly in both the ionosphere and magnetosphere, emitting modulated signals at millions of watts and millions of frequencies, is likely to alter our electromagnetic environment beyond our ability to adapt.⁶⁹

[Informal monitoring](#) has already provided evidence indicating serious effects on humans and animals from the approximately 100 satellites that have provided 2G and 3G phone service from low orbit since 1998. Such effects cannot be understood only from consideration of the low levels of radiation on the ground. Knowledge from other relevant scientific disciplines must be taken into account, including the fields of atmospheric physics and acupuncture.^{70,71,72,73} Adding 20,000 5G satellites will further pollute the [global electric circuit](#)^{74,75} and could [alter the Schumann resonances](#),⁷⁶ with which all life on Earth has evolved. The effects will be universal and may be profoundly damaging.

5G is qualitatively and quantitatively different from 4G

The idea that we will tolerate [tens to hundreds of times more radiation](#) at millimetre wavelengths is based on faulty modelling of the human body as a [shell filled with a homogeneous liquid](#).^{77,78} The assumption that millimetre waves do not penetrate beyond the skin completely ignores nerves,⁷⁹ blood vessels^{80,81} and other electrically conducting structures that can carry radiation-induced currents deep into the body.^{82,83,84} Another, potentially more serious error is that phased arrays are not ordinary antennas. When an ordinary electromagnetic field enters the body, it causes charges to move and currents to flow. But when extremely short electromagnetic pulses enter the body, something else happens: the moving charges themselves become little antennas that reradiate the electromagnetic field and send it deeper into the body. These reradiated waves are called [Brillouin precursors](#).⁸⁵ They become significant when either the power or the phase of the waves [changes rapidly enough](#).⁸⁶ 5G will probably satisfy both criteria.

In addition, shallow penetration in itself poses a unique danger to eyes and to the largest organ of the body, the skin, as well as to very small creatures. Peer-reviewed studies have recently been published, predicting [thermal skin burns](#)⁸⁷ in humans from 5G radiation and [resonant absorption by insects](#),⁸⁸ which absorb up to 100 times as much radiation at millimetre

International Appeal: Stop 5G on Earth and in Space

wavelengths as they do at wavelengths presently in use. Since [populations of flying insects have declined by 75-80 per cent](#) since 1989 even in protected nature areas,⁸⁹ 5G radiation could have catastrophic effects on insect populations worldwide. A [1986 study by Om Gandhi](#) warned that millimetre waves are strongly absorbed by the cornea of the eye, and that ordinary clothing, being of millimetre-size thickness, increases the absorption of energy by the skin by a resonance-type effect.⁹⁰ [Russell \(2018\)](#) reviews the known effects of millimetre waves on skin, eyes (including cataracts), heart rate, immune system and DNA.⁹¹

Regulators have deliberately excluded the scientific evidence of harm

Stakeholders thus far in the development of 5G have been industry and governments, while renowned international EMF scientists who have documented biological effects on humans, animals, insects and plants, and alarming effects on health and the environment in thousands of peer-reviewed studies have been excluded. The reason for the current inadequate safety guidelines is that [conflicts of interest](#) of standard-setting bodies “due to their relationships with telecommunications or electric companies undermine the impartiality that should govern the regulation of Public Exposure Standards for non-ionizing radiation”.⁹² Professor Emeritus Martin L. Pall lays out the conflicts of interest in detail, and the lists of important studies that have been excluded, in his [literature review](#).⁹³

The thermal hypothesis is obsolete – new safety standards are needed

Current safety guidelines are based on the [obsolete hypothesis](#) that heating is the only harmful effect of EMFs. As Markov and Grigoriev [have stated](#), “Today standards do not consider the real pollution of the environment with nonionizing radiation”.⁹⁴ Hundreds of scientists, including many signatories to this appeal, have proven that many different kinds of acute and chronic illnesses and injuries are [caused without heating](#) (“non-thermal effect”) from radiation levels far below international guidelines.⁹ Biological effects occur even at near-zero power levels. Effects that have been found at 0.02 picowatts (trillionths of a watt) per square centimetre or less include [altered genetic structure in E. coli](#)⁹⁵ and [in rats](#),⁹⁶ [altered EEG](#) in humans,⁹⁷ [growth stimulation](#) in bean plants,⁹⁸ and [stimulation of ovulation](#) in chickens.⁹⁹

To protect against non-thermal effects, duration of exposure must be considered. 5G will expose everyone to many more transmissions simultaneously and continuously, day and night without cessation. New safety standards are needed and should be based on *cumulative exposure* and *not only on power levels* but also on frequency, bandwidth, modulation, waveform, pulse width and other properties that are biologically important. Antennas must be confined to specific, publicly identified locations. To protect humans, antennas must be located far from where people live and work, and excluded from the public rights-of-way where people walk. To protect wildlife, they must be excluded from wilderness sanctuaries and strictly minimized in remote areas of the Earth. To protect all life, commercial communications satellites must be limited in number and prohibited in low- and medium-Earth orbits. Phased arrays must be prohibited on Earth and in space.

International Appeal: Stop 5G on Earth and in Space

RF radiation has both acute and chronic effects

RF radiation has both immediate and long-term effects. Cancer and heart disease are examples of long-term effects. [Alteration of heart rhythm](#)¹⁰⁰ and [changes in brain function \(EEG\)](#)¹⁰¹ are examples of immediate effects. A syndrome that was called [radiowave sickness](#)¹⁰² in the former Soviet Union and is called [electromagnetic hypersensitivity](#) (EHS) around the world today¹⁰³ can be either acute or chronic. Professor Dr. Karl Hecht has published a [detailed history](#) of these syndromes, compiled from a review of more than 1,500 Russian scientific papers and the clinical histories of more than 1,000 of his own patients in Germany. Objective findings include sleep disorders, abnormal blood pressure and heart rate, digestive disorders, hair loss, tinnitus and skin rash. Subjective symptoms include dizziness, nausea, headache, memory loss, inability to concentrate, fatigue, flu-like symptoms and cardiac pain.¹⁰⁴

The [EUROPAEM EMF Guideline 2016](#) states that EHS develops when people are “continuously exposed in their daily life” to increasing levels of EMFs, and that “reduction and prevention of EMF exposure” is necessary to restore these patients to health.¹⁰⁵ EHS should no longer be considered a disease, but an injury by a toxic environment that affects an increasingly large portion of the population, estimated already at 100 million people worldwide,^{106,107} and that [may soon affect everyone](#)¹⁰⁸ if the worldwide rollout of 5G is permitted.

The [International Scientific Declaration on EHS and multiple chemical sensitivity \(MCS\)](#), Brussels, declared in 2015 that “[i]naction is a cost to society and is not an option any more ... [W]e unanimously acknowledge this serious hazard to public health ... [urgently requiring] that major primary prevention measures are adopted and prioritized, to face this worldwide pan-epidemic in perspective” (emphasis added).¹⁰⁹

World governments are failing in their duty of care to the populations they govern

In their haste to implement 5G and to encourage the unconstrained use of outer space, the European Union, United States and national governments worldwide are taking steps to ensure a “barrier-free” regulatory environment.¹¹⁰ They are [prohibiting local authorities from enforcing environmental laws](#),¹¹¹ and “in the interest of speedy and cost-effective deployment”, removing “unnecessary burdens ... such as local planning procedures [and] the variety of specific limits on electromagnetic field (EMF) emissions and of the methods required to aggregate them”.¹¹²

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 metres 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

International Appeal: Stop 5G on Earth and in Space

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.

International agreements are being violated

Children and duty of care

The United Nations [Convention on the Rights of the Child](#): States shall “undertake to ensure the child such protection and care as is necessary for his or her well-being” (art. 3), “ensure ... the survival and development of the child” (art. 6) and “take appropriate measures to combat disease ... taking into consideration the dangers and risks of environmental pollution” (art. 24(c)).

[The Nuremberg Code \(1947\)](#) applies to all experiments on humans, thus including the deployment of 5G with new, higher RF radiation exposure that has not been pre-market tested for safety. “The voluntary consent of the human subject is absolutely essential” (art. 1). Exposure to 5G will be involuntary. “No experiment should be conducted, where there is an a priori reason to believe that death or disabling injury will occur” (art. 5). The findings of over 10,000 scientific studies and the voices of [hundreds of international organizations](#) representing hundreds of thousands of members who have suffered disabling injury and been displaced from their homes by already-existing wireless telecommunications facilities, are “a priori reasons to believe that death or disabling injury will occur”.

Duty to inform and EMFs

The [World Telecommunication Standardization Assembly \(2012\)](#) of the International Telecommunication Union (ITU) stated that “[t]here is a need to inform the public of the potential effects of exposure to electromagnetic fields (EMFs)” and invited Member States “to adopt suitable measures in order to ensure compliance with relevant international recommendations to protect health against the adverse effect of EMF”.

The [Mid-term review of the European Environment and Health Action Plan 2004-2010](#) (2008): “The European Parliament ... [n]otes that the limits on exposure to electromagnetic fields which have been set for the general public are obsolete, ... obviously take no account of developments in information and communication technologies, of the recommendations issued by the European Environment Agency or of the stricter emission standards adopted, for example, by Belgium, Italy and Austria, and do not address the issue of vulnerable groups, such as pregnant women, newborn babies and children.”

[Resolution 1815 \(Council of Europe, 2011\)](#): “Take all reasonable measures to reduce exposure to electromagnetic fields, especially to radio frequencies from mobile phones, and particularly the exposure to children and young people.”

International Appeal: Stop 5G on Earth and in Space

Environment

The [Declaration of the United Nations Conference on the Human Environment](#) (1972): “The discharge of toxic substances ... in such quantities or concentrations as to exceed the capacity of the environment to render them harmless, must be halted in order to ensure that serious or irreversible damage is not inflicted upon ecosystems” (principle 6).

The [World Charter for Nature](#) (1982): “Activities which are likely to cause irreversible damage to nature shall be avoided ... [W]here potential adverse effects are not fully understood, the activities should not proceed” (art. 11).

The [Rio Declaration on Environment and Development](#) (1992): “States have ... the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction” (principle 2).

The United Nations [World Summit on Sustainable Development](#) (2002): “There is an urgent need to ... create more effective national and regional policy responses to environmental threats to human health” (para. 54(k)).

The [African Convention on the Conservation of Nature and Natural Resources](#) (2017): “The Parties shall ... take all appropriate measures to prevent, mitigate and eliminate to the maximum extent possible, detrimental effects on the environment, in particular from radioactive, toxic, and other hazardous substances and wastes” (art. 13).

Health and human rights

The [Universal Declaration of Human Rights](#): “Everyone has the right to life, liberty and security of person” (art. 3).

The United Nations [Global Strategy for Women’s, Children’s and Adolescents’ Health \(2016-2030\)](#) has as objectives and targets to “transform”, by expanding enabling environments; to “survive”, by reducing maternal and newborn mortality; and to “thrive” by ensuring health and well-being and reducing pollution-related deaths and illnesses.

Space

The [Outer Space Treaty](#) (1967) requires that the use of outer space be conducted “so as to avoid [its] harmful contamination and also adverse changes in the environment of the Earth” (art. IX).

The [United Nations Guidelines for The Long-Term Sustainability of Outer Space Activities](#) (2018): “States and international intergovernmental organizations should address ... risks to people, property, public health and the environment associated with the launch, in-orbit operation and re-entry of space objects” (guideline 2.2(c)).

World governments are playing dice with life on Earth

Albert Einstein famously asserted that “God does not play dice”.¹¹⁸ Yet by pursuing the broadcast on Earth and from space of 5G, an unprecedented technology of millimetre waves

International Appeal: Stop 5G on Earth and in Space

previously used as an energy weapon in [military operations and crowd control](#),¹¹⁹ world governments are recklessly playing dice with the future of life on Earth.

To refuse to accept and apply relevant and valid scientific knowledge is ethically unacceptable. Existing research shows that 5G—and especially space-based 5G—contravenes principles enshrined in a host of international agreements.

We call upon the UN, WHO, EU, Council of Europe and governments of all nations,

(a) *To take* immediate measures to halt the deployment of 5G on Earth and in space in order to protect all humankind, especially the unborn, infants, children, adolescents and pregnant women, as well as the environment;

(b) *To follow* the [United Nations Convention on the Rights of the Child](#) and [Council of Europe Resolution 1815](#) by informing citizens, including teachers and physicians, about the health risks (to adults and children) from RF radiation, and *why they should* and *how they can* avoid wireless communication and base stations, particularly in or near day-care centres, schools, hospitals, homes and workplaces;

(c) *To favour and implement* wired telecommunications instead of wireless;

(d) *To prohibit* the wireless/telecommunications industry [through its lobbying organizations](#) from [persuading officials](#) to make decisions permitting further expansion of RF radiation, including ground- and space-based 5G;

(e) *To appoint* immediately—without industry influence—international groups of independent, truly impartial EMF and health scientists with no conflicts of interest,¹²⁰ for the purpose of establishing new international safety standards for RF radiation that are not based only on power levels, that consider cumulative exposure, and that protect against *all* health and environmental effects, not just thermal effects and not just effects on humans;

(f) *To appoint* immediately—without industry influence—international groups of scientists with expertise in EMFs, health, biology and atmospheric physics, for the purpose of developing a comprehensive regulatory framework that will ensure that the uses of outer space are safe for humans and the environment, taking into account RF radiation, rocket exhaust gases, black soot, and space debris and their impacts on [ozone](#),¹²¹ [global warming](#),¹²² the atmosphere and the preservation of life on Earth. Not only ground-based but also space-based technology must be sustainable¹²³ for adults and children, animals and plants.

Please respond to the Appeal Administrator listed below

detailing the measures you intend to take to protect the global population against RF radiation exposure, especially 5G radiation.

This appeal and your response will be publicly available on www.5gSpaceAppeal.org.

International Appeal: Stop 5G on Earth and in Space

Respectfully submitted,

Arthur Firstenberg, Appeal Administrator, info@5gSpaceAppeal.org

Initial Signatories

AFRICA

Lauraine Margaret Helen Vivian, PhD, Anthropology and Psychiatry; Honorary Research Associate, Faculty of Health and Medical Sciences, University of Copenhagen, Denmark.
Signatory for **South Africa**

ASIA

Girish Kumar, PhD, Professor, Electrical Engineering Department, Indian Institute of Technology Bombay, Powai, Mumbai, **India**

AUSTRALIA

Don Maisch, PhD, Independent researcher, author of "The Procrustean Approach", Lindisfarne, Tasmania, **Australia**

EUROPE

Alfonso Balmori, BSc, Master in Environmental Education, Biologist. Valladolid, **Spain**
Klaus Buchner, Dr. rer. nat., Professor, MEP – Member of the European Parliament, Kompetenzinitiative zum Schutz von Mensch, Umwelt und Demokratie e.V., München, **Germany**
Daniel Favre, Dr. phil. nat., Biologist, A.R.A. (Association Romande Alerte aux Ondes Electromagnétiques), **Switzerland**
Annie Sasco, MD, DrPH, SM, HDR, former Chief of Research Unit of Epidemiology for Cancer Prevention at the International Agency for Research on Cancer (IARC), Lyon; former Acting Chief, Programme for Cancer Control of the World Health Organization (WHO); former Director of Research at the Institut National de la Santé et de la Recherche Médicale (INSERM); **France**

NORTH AMERICA

Martin Pall, Professor Emeritus of Biochemistry and Basic Medical Sciences, Washington State University, residing in Portland, Oregon, **USA**
Kate B. Showers, PhD, Soil Science, Senior Research Fellow, Centre for World Environmental History, University of Sussex, Falmer, Brighton, UK, residing in Bolton-Est, Québec, **Canada**

SOUTH AMERICA

Carlos Sosa, MD, University of Antioquia, Medellín, **Colombia**

International Appeal: Stop 5G on Earth and in Space

References

- ¹ De Grasse M. AT&T outlines 5G network architecture. RCR Wireless News, Oct. 20, 2016. <https://www.rcrwireless.com/20161020/network-infrastructure/att-outlines-5g-network-architecture-tag4>. Accessed July 9, 2018.
- ² Hong W, Jiang ZH, Yu C, et al. Multibeam antenna technologies for 5G wireless communications. *IEEE Tr Ant Prop.* 2017;65(12):6231-6249. doi: 10.1109/TAP.2017.2712819.
- ³ Chou H-T. Design Methodology for the Multi-Beam Phased Array of Antennas with Relatively Arbitrary Coverage Sector. Conference paper: 2017 11th European Conference on Antennas and Propagation; Paris, France. doi: 10.23919/EuCAP.2017.7928095.
- ⁴ 47 CFR § 30.202 – Power limits.
- ⁵ [SpaceX](#), [WorldVu](#), [Boeing](#), [Telesat Canada](#) and [Iridium](#).
- ⁶ Federal Communications Commission. *Pending Application for Satellite Space and Earth Station Authorization. Schedule S, Technical Report.* Dated April 2016, filed March 1, 2017. http://licensing.fcc.gov/myibfs/download.do?attachment_key=1200245. Accessed June 17, 2018.
- ⁷ Governments and organizations that ban or warn against wireless technology. Cellular Phone Task Force website. www.cellphonetaskforce.org/governments-and-organizations-that-ban-or-warn-against-wireless-technology/. Accessed June 10, 2018. Continually updated.
- ⁸ The International Doctors' Appeal (Freiburger Appeal). <http://freiburger-appell-2012.info/en/home.php?lang=EN>. Published in 2012. Accessed June 10, 2018.
- ⁹ International appeal: scientists call for protection from non-ionizing electromagnetic field exposure. International EMF Scientist Appeal website. <https://emfscientist.org/index.php/emf-scientist-appeal>. Published May 11, 2015. Accessed June 10, 2018. As of March 2018, 237 EMF scientists from 41 nations had signed the Appeal.
- ¹⁰ Glaser Z. Cumulated index to the bibliography of reported biological phenomena ('effects') and clinical manifestations attributed to microwave and radio-frequency radiation: report, supplements (no. 1-9). BEMS newsletter (B-1 through B-464), 1971-1981. <http://www.cellphonetaskforce.org/wp-content/uploads/2018/06/Zory-Glasers-index.pdf>. Accessed June 26, 2018. Report and 9 supplements issued by Naval Medical Research Institute, Bethesda, MD; Research Division, Bureau of Medicine & Surgery, Dept. of the Navy, Washington, DC; Electromagnetic Radiation Project Office, Naval Medical Research & Development Command, Bethesda, MD; Naval Surface Weapons Center, Dahlgren, VA; and National Institute for Occupational Safety and Health, Rockville, MD. Index by Julie Moore and Associates, Riverside, CA, 1984. Lt. Zorach Glaser, PhD, catalogued 5,083 studies, books and conference reports for the US Navy through 1981.
- ¹¹ Sage C, Carpenter D., eds. *BioInitiative Report: A Rationale for a Biologically-Based Public Exposure Standard for Electromagnetic Radiation.* Sage Associates; 2012. www.bioinitiative.org. Accessed June 10, 2018. The 1,470-page *BioInitiative Report*, authored by an international group of 29 experts, has reviewed more than 1,800 new studies and is continually updated.
- ¹² Grigoriev Y. Bioeffects of modulated electromagnetic fields in the acute experiments (results of Russian researches). *Annu Russ Natl Comm Non-Ionising Radiat Protect.* 2004:16-73. <http://bemri.org/publications/biological-effects-of-non-ionizing-radiation/78-grigoriev-bioeffects07/file.html>. Accessed June 17, 2018.
- ¹³ Obajuluwa AO, Akinyemi AJ, Afolabi OB, et al. Exposure to radio-frequency electromagnetic waves alters acetylcholinesterase gene expression, exploratory and motor coordination-linked behaviour in male rats. *Toxicol Rep.* 2017;4:530-534. <https://www.sciencedirect.com/science/article/pii/S221475001730063X/pdf?md5=0af5af76124b1f89f6d23c90c5c7764f&pid=1-s2.0-S221475001730063X-main.pdf>. Accessed June 17, 2018.
- ¹⁴ Volkow ND, Tomasi D, Wang G-J, et al. Effects of cell phone radiofrequency signal exposure on brain glucose metabolism. *JAMA.* 2012;305(8):808-813. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3184892>. Accessed June 17, 2018.

International Appeal: Stop 5G on Earth and in Space

- ¹⁵ Eghlidospour M, Ghanbari A, Mortazavi S, Azari H. Effects of radiofrequency exposure emitted from a GSM mobile phone on proliferation, differentiation, and apoptosis of neural stem cells. *Anat Cell Biol*. 2017;50(2):115-123. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5509895>. Accessed June 17, 2018.
- ¹⁶ Hardell L, Carlberg C. Mobile phones, cordless phones and the risk for brain tumors. *Int J Oncol*. 2009;35(1):5-17. <https://www.spandidos-publications.com/ijo/35/1/5/download>. Accessed June 17, 2018.
- ¹⁷ Bandara P, Weller S. Cardiovascular disease: Time to identify emerging environmental risk factors. *Eur J Prev Cardiol*. 2017;24(17):1819-1823. <http://journals.sagepub.com/doi/10.1177/2047487317734898>. Accessed June 17, 2018.
- ¹⁸ Deshmukh P et al. Cognitive impairment and neurogenotoxic effects in rats exposed to low-intensity microwave radiation. *Int J Toxicol*. 2015;34(3):284-290. doi: 10.1177/1091581815574348.
- ¹⁹ Zothansiam, Zosangzuali M, Lalramdinpuii M, Jagetia GC. Impact of radiofrequency radiation on DNA damage and antioxidants in peripheral blood lymphocytes of humans residing in the vicinity of mobile phone base stations. *Electromagn Biol Med*. 2017;36(3):295-305. doi: 10.1080/15368378.2017.1350584.
- ²⁰ Zwamborn A, Vossen S, van Leersum B, Ouwens M, Mäkel W. Effects of Global Communication system radio-frequency fields on Well Being and Cognitive Functions of human subjects with and without subjective complaints. TNO Report FEL-03-C148. The Hague: TNO Physics and Electronics Laboratory; 2003. http://www.milieugezondheid.be/dossiers/gsm/TNO_rapport_Nederland_sept_2003.pdf. Accessed June 16, 2018.
- ²¹ Havas M. When theory and observation collide: Can non-ionizing radiation cause cancer? *Environ Pollut*. 2017;221:501-505. doi: 10.1016/j.envpol.2016.10.018.
- ²² Narayanan SN, Kumar RS, Potu BK, Nayak S, Mailankot M. Spatial memory performance of Wistar rats exposed to mobile phone. *Clinics*. 2009;64(3):231-234. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2666459>. Accessed June 17, 2018.
- ²³ Houston BJ, Nixon B, King BV, De Luliis GN, Aitken RJ. The effects of radiofrequency electromagnetic radiation on sperm function. *Reproduction*. 2016;152(6):R263-R266. <http://www.reproduction-online.org/content/152/6/R263.long>. Accessed June 17, 2018.
- ²⁴ Han J, Cao Z, Liu X, Zhang W, Zhang S. Effect of early pregnancy electromagnetic field exposure on embryo growth ceasing. *Wei Sheng Yan Jiu*. 2010;39(3):349-52 (in Chinese). <https://www.ncbi.nlm.nih.gov/pubmed/20568468>.
- ²⁵ Salford LG, Brun AE, Eberhardt JL, Malmgren L, Persson BRR. Nerve cell damage in mammalian brain after exposure to microwaves from GSM mobile phones. *Environ Health Perspect*. 2003;111(7):881-883. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1241519/pdf/ehp0111-000881.pdf>. Accessed June 17, 2018.
- ²⁶ Milham S. Evidence that dirty electricity is causing the worldwide epidemics of obesity and diabetes. *Electromagn Biol Med*. 2014;33(1):75-78. doi: 10.3109/15368378.2013.783853.
- ²⁷ Yakymenko I, Tsybulin O, Sidorik E, Henshel D, Kyrlylenko O, Kyrlylenko S. Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation. *Electromagn Biol Med*. 2016;35(2):186-202. doi: 10.3109/15368378.2015.1043557.
- ²⁸ Herbert M, Sage C. Findings in autism (ASD) consistent with electromagnetic fields (EMF) and radiofrequency radiation (RFR). In: Sage C, Carpenter D., eds. *BioInitiative Report: A Rationale for a Biologically-Based Public Exposure Standard for Electromagnetic Radiation*. Sec. 20. Sage Associates; 2012. http://www.bioinitiative.org/report/wp-content/uploads/pdfs/sec20_2012_Findings_in_Autism.pdf. Accessed June 29, 2018.
- ²⁹ Divan HA, Kheifets L, Obel C, Olsen J. Prenatal and postnatal exposure to cell phone use and behavioral problems in children. *Epidemiology* 2008;19: 523–529. http://www.wifiinschools.com/uploads/3/0/4/2/3042232/divan_08_prenatal_postnatal_cell_phone_use.pdf. Accessed June 29, 2018.
- ³⁰ Divan HA, Kheifets L, Obel C, Olsen J. Cell phone use and behavioural problems in young children. *J Epidemiol Community Health*. 2010;66(6):524-529. doi: 10.1136/jech.2010.115402. Accessed July 16, 2018.

International Appeal: Stop 5G on Earth and in Space

- ³¹ Li D-K, Chen H, Odouli R. Maternal exposure to magnetic fields during pregnancy in relation to the risk of asthma in offspring. *Arch Pediatr Adolesc Med*. 2011;165(10):945-950. <https://jamanetwork.com/journals/jamapediatrics/fullarticle/1107612>. Accessed June 29, 2018.
- ³² Warnke U. *Bees, Birds and Mankind: Destroying Nature by 'Electrosmog.'* Competence Initiative for the Protection of Humanity, Environment and Democracy; 2009. www.naturalscience.org/wp-content/uploads/2015/01/kompetenzinitiative-ev_study_bees-birds-and-mankind_04-08_english.pdf. Accessed June 10, 2018.
- ³³ Balmori A. Electromagnetic pollution from phone masts. Effects on wildlife. *Pathophysiology*. 2009;16:191-199. doi:10.1016/j.pathophys.2009.01.007. Accessed June 10, 2018.
- ³⁴ Cammaerts MC, Johansson O. Ants can be used as bio-indicators to reveal biological effects of electromagnetic waves from some wireless apparatus. *Electromagn Biol Med*. 2014;33(4):282-288. doi: 10.3109/15368378.2013.817336.
- ³⁵ Broomhall M. *Report detailing the exodus of species from the Mt. Nardi area of the Nightcap National Park World Heritage Area during a 15-year period (2000-2015)*. Report for the United Nations Educational Scientific and Cultural Organization (UNESCO). <https://ehtrust.org/wp-content/uploads/Mt-Nardi-Wildlife-Report-to-UNESCO-FINAL.pdf>. Accessed June 17, 2018.
- ³⁶ Kordas D. *Birds and Trees of Northern Greece: Changes since the Advent of 4G Wireless*. 2017. <https://einarflydal.files.wordpress.com/2017/08/kordas-birds-and-trees-of-northern-greece-2017-final.pdf>. Accessed June 29, 2018.
- ³⁷ Waldmann-Selsam C, Balmori-de la Puente A, Breunig H, Balmori A. Radiofrequency radiation injures trees around mobile phone base stations. *Sci Total Environ*. 2016;572:554-569. doi: 10.1016/j.scitotenv.2016.08.045.
- ³⁸ Balmori A. Mobile phone mast effects on common frog (*Rana temporaria*) tadpoles: The city turned into a laboratory. *Electromagn Biol Med*. 2010(1-2):31-35. doi: 10.3109/15368371003685363.
- ³⁹ Margaritis LH, Manta AK, Kokkaliaris KD, et al. *Drosophila* oogenesis as a bio-marker responding to EMF sources. *Electromagn Biol Med*. 2014;33(3):165-189. doi: 10.3109/15368378.2013.800102.
- ⁴⁰ Kumar NR, Sangwan S, Badotra P. Exposure to cell phone radiations produces biochemical changes in worker honey bees. *Toxicol Int*. 2011;18(1):70-72. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3052591>. Accessed June 17, 2018.
- ⁴¹ Balmori A. Efectos de las radiaciones electromagnéticas de la telefonía móvil sobre los insectos. *Ecosistemas*. 2006;15(1):87-95. <https://www.revistaecosistemas.net/index.php/ecosistemas/articulo/download/520/495>. Accessed June 17, 2018.
- ⁴² Balmori A. The incidence of electromagnetic pollution on wild mammals: A new "poison" with a slow effect on nature? *Environmentalist*. 2010;30(1):90-97. doi: 10.1007/s10669-009-9248-y
- ⁴³ Magras IN, Xenos TD. RF radiation-induced changes in the prenatal development of mice. *Bioelectromagnetics* 1997;18(6):455-461. http://collectiveactionquebec.com/uploads/8/0/9/7/80976394/exhibit_r-62_magras_mice_study.pdf. Accessed June 17, 2018.
- ⁴⁴ Otitolaju AA, Osunkalu VO, Oduware R, et al. Haematological effects of radiofrequency radiation from GSM base stations on four successive generations (F1 – F4) of albino mice, *Mus Musculus*. *J Environ Occup Sci*. 2012;1(1):17-22. <https://www.ejmanager.com/mnstemps/62/62-1332160631.pdf?t=1532966199>. Accessed July 30, 2018.
- ⁴⁵ Magone I. The effect of electromagnetic radiation from the Skrunđa Radio Location Station on *Spirodela polyrhiza* (L.) Schleiden cultures. *Sci Total Environ*. 1996;180(1):75-80. doi: 0048-9697(95)04922-3.
- ⁴⁶ Nittby H, Brun A, Strömbad S, et al. Nonthermal GSM RF and ELF EMF effects upon rat BBB permeability. *Environmentalist*. 2011;31(2):140-148. doi: 10.1007/s10669-011-9307-z.
- ⁴⁷ Haggerty K. Adverse influence of radio frequency background on trembling aspen seedlings: Preliminary observations. *International Journal of Forestry Research*. 2010; Article ID 836278. <http://downloads.hindawi.com/journals/ijfr/2010/836278.pdf>. Accessed June 17, 2018.
- ⁴⁸ Taheri M, Mortazavi SM, Moradi M, et al. Evaluation of the effect of radiofrequency radiation emitted from Wi-Fi router and mobile phone simulator on the antibacterial susceptibility of pathogenic bacteria

International Appeal: Stop 5G on Earth and in Space

Listeria monocytogenes and Escherichia coli. *Dose Response*. 2017;15(1):1559325816688527.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5298474>. Accessed June 18, 2018.

⁴⁹ International Agency for Research on Cancer. Non-ionizing radiation, part 2: radiofrequency electromagnetic fields. In: *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans*. Vol 102. Lyon, France: WHO Press; 2013. <http://monographs.iarc.fr/ENG/Monographs/vol102/mono102.pdf>. Accessed July 2, 2018.

⁵⁰ Carlberg M, Hardell L. Evaluation of mobile phone and cordless phone use and glioma risk using the Bradford Hill viewpoints from 1965 on association and causation. *Biomed Res Int*. 2017;9218486.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5376454>. Accessed June 17, 2018.

⁵¹ Blackman CF. Evidence for disruption by the modulating signal. In: Sage C, Carpenter D., eds. *Bioinitiative Report: A Rationale for a Biologically-Based Public Exposure Standard for Electromagnetic Radiation*. Sec. 15. Sage Associates; 2012. http://www.bioinitiative.org/report/wp-content/uploads/pdfs/sec15_2007_Modulation_Blackman.pdf. Accessed June 19, 2018.

⁵² Williams ER. The global electrical circuit: a review. *Atmos Res*. 2009;91(2):140-152.

doi:10.1016/j.atmosres.2008.05.018.

⁵³ Wever R. Human circadian rhythms under the influence of weak electric fields and the different aspects of these studies. *Int J Biometeorol*. 1973;17(3):227-232. www.vitatec.com/docs/referenz-umgebungsstrahlung/wever-1973.pdf. Accessed June 10, 2018.

⁵⁴ Wever R. ELF-effects on human circadian rhythms. In: *ELF and VLF Electromagnetic Field Effects*. (Persinger M, ed.) New York: Plenum; 1974:101-144.

⁵⁵ Engels S, Schneider N-L, Lefeldt N, et al. Anthropogenic electromagnetic noise disrupts magnetic compass orientation in a migratory bird. *Nature*. 2014;509:353-356. doi:10.1038/nature13290.

⁵⁶ Ludwig W, Mecke R. Wirkung künstlicher Atmosphärischer auf Säuger. *Archiv für Meteorologie, Geophysik und Bioklimatologie Serie B (Archives for Meteorology Geophysics and Bioclimatology Series B Theoretical and Applied Climatology)*. 1968;16(2-3):251-261. doi:10.1007/BF02243273.

⁵⁷ Morley EL, Robert D. Electric fields elicit ballooning in spiders. *Current Biology*. 2018;28:1-7.

[https://www.cell.com/current-biology/pdf/S0960-9822\(18\)30693-6.pdf](https://www.cell.com/current-biology/pdf/S0960-9822(18)30693-6.pdf). Accessed July 14, 2018.

⁵⁸ Weber J. *Die Spinnen sind Deuter des kommenden Wetters (Spiders Are Predictors of the Coming Weather)*. 1800; Landshut, Germany. "The electrical material works always in the atmosphere; no season can retard its action. Its effects on the weather are almost undisputed; spiders sense it, and alter their behaviour accordingly."

⁵⁹ König H. Biological effects of extremely low frequency electrical phenomena in the atmosphere. *J Interdiscipl Cycle Res*. 2(3):317-323. www.tandfonline.com/doi/abs/10.1080/09291017109359276.

Accessed June 10, 2018.

⁶⁰ Sulman F. *The Effect of Air Ionization, Electric Fields, Atmospheric, and Other Electric Phenomena On Man and Animal*. American lecture series. Vol 1029. Springfield, Ill: Thomas; 1980.

⁶¹ König HL, Krüger, AP, Lang S, Sönning, W. *Biologic Effects of Environmental Electromagnetism*. New York: Springer-Verlag; 1981. doi: 10.1007/978-1-4612-5859-9.

⁶² Sazanova E, Sazanov A, Sergeenko N, Ionova V, Varakin Y. Influence of near earth electromagnetic resonances on human cerebrovascular system in time of heliogeophysical disturbances. *Progress in Electromagnetics Research Symposium*. August 2013:1661-1665.

⁶³ Cherry N. Schumann resonances, a plausible biophysical mechanism for the human health effects of solar/geomagnetic activity. *Natural Hazards*. 2002;26(3):279-331. doi:10.1023/A:1015637127504.

⁶⁴ Polk C. Schumann resonances. In Volland H, ed. *CRC Handbook of Atmospheric*. Vol. 1. Boca Raton, Fla: CRC Press; 1982:111-178. <https://archive.org/stream/in.ernet.dli.2015.132044/2015.132044.Crc-Handbook-Of-Atmospherics-Vol-1#page/n115/mode/2up/search/polk>. Accessed June 18, 2018.

⁶⁵ Park C, Helliwell R. Magnetospheric effects of power line radiation. *Science*. 1978;200(4343):727-730. doi:10.1126/science.200.4343.727.

⁶⁶ Bullough K, Kaiser TR, Strangeways HJ. Unintentional man-made modification effects in the magnetosphere. *J Atm Terr Phys*. 1985;47(12):1211-1223.

International Appeal: Stop 5G on Earth and in Space

⁶⁷ Luette JP, Park CG, Helliwell RA. The control of the magnetosphere by power line radiation. *J Geophys Res.* 1979;84:2657-2660.

⁶⁸ Becker RO, Selden G. *The Body Electric: Electromagnetism and the Foundation of Life.* New York: Morrow; 1985:325-326.

⁶⁹ Firstenberg A. Planetary Emergency. Cellular Phone Task Force website.

www.cellphonetaskforce.org/planetary-emergency. Published 2018. Accessed June 10, 2018.

⁷⁰ Becker RO. The basic biological data transmission and control system influenced by electrical forces. *Ann NY Acad Sci.* 1974;238:236-241. doi: 10.1111/j.1749-6632.1974.tb26793.x.

⁷¹ Maxey ES, Beal JB. The electrophysiology of acupuncture; How terrestrial electric and magnetic fields influence air ion energy exchanges through acupuncture points. *International Journal of Biometeorology.* 1975;19(Supp. 1):124. doi:10.1007/BF01737335.

⁷² Čosić I, Cvetković D, Fang Q, Jovanov E, Lazoura H. Human electrophysiological signal responses to ELF Schumann resonance and artificial electromagnetic fields. *FME Transactions.* 2006;34:93-103. <http://scindeks-clanci.ceon.rs/data/pdf/1450-8230/2006/1450-82300602093C.pdf>. Accessed July 18, 2018.

⁷³ Cohen M, Behrenbruch C, Čosić I. Is there a link between acupuncture meridians, earth-ionosphere resonances and cerebral activity? Proceedings of the 2nd International Conference on Bioelectromagnetism, Melbourne, Australia. 1998:173-174. doi: 10.1109/ICBEM.1998.666451.

⁷⁴ Chevalier G, Mori K, Oschman JL. The effect of earthing (grounding) on human physiology. *European Biology and Bioelectromagnetics.* January 2006:600-621. <http://162.214.7.219/~earthio0/wp-content/uploads/2016/07/Effects-of-Earthing-on-Human-Physiology-Part-1.pdf>. Accessed June 10, 2018. "Highly significant EEG, EMG and BVP results demonstrate that restoring the natural electrical potential of the earth to the human body (earthing) rapidly affects human electrophysiological and physiological parameters. The extreme rapidity of these changes indicates a physical/bioelectrical mechanism rather than a biochemical change."

⁷⁵ Firstenberg A. Earth's Electric Envelope. In: *The Invisible Rainbow: A History of Electricity and Life.* Santa Fe, NM: AGB Press; 2017: 113-131.

⁷⁶ Cannon PS, Rycroft MJ. Schumann resonance frequency variations during sudden ionospheric disturbances. *J Atmos Sol Terr Phys.* 1982;44(2):201-206. doi:10.1016/0021-9169(82)90124-6.

⁷⁷ *Technical Report.* European Telecommunications Standards Institute; 2007:7.

www.etsi.org/deliver/etsi_tr/125900_125999/125914/07.00.00_60/tr_125914v070000p.pdf. Accessed June 10, 2018. "The Specific Anthropomorphic Mannequin (SAM) is used for radiated performance measurements [and is] filled with tissue simulating liquid."

⁷⁸ Research on technology to evaluate compliance with RF protection guidelines. Electromagnetic Compatibility Laboratory, Tokyo. http://emc.nict.go.jp/bio/phantom/index_e.html. Accessed July 18, 2018. "SAR is measured by filling phantom liquid that has the same electrical properties as those of the human body in a container made in the shape of the human body, and scanning the inside using an SAR probe."

⁷⁹ Becker RO, Marino AA. *Electromagnetism and Life.* Albany: State University of New York Press; 1982:39. "The evidence seems to be quite conclusive that there are steady DC electric currents flowing outside of the neurones proper in the entire nervous system."

⁸⁰ Nordenström B. *Biologically Closed Electric Circuits.* Stockholm: Nordic Medical Publications; 1983.

⁸¹ Nordenström B. Impact of biologically closed electric circuits (BCEC) on structure and function. *Integr Physiol Behav Sci.* 1992;27(4):285-303. doi:10.1007/BF02691165.

⁸² Devyatkov ND, ed. *Non-Thermal Effects of Millimeter Radiation.* Moscow: USSR Acad. Sci.; 1981 (Russian).

⁸³ Devyatkov ND, Golant MB, Betskiy OV. *Millimeter Waves and Their Role in the Processes of Life.* (*Millimetrovye volny i ikh rol' v protsessakh zhiznedeyatel'nosti*). Moscow: Radio i svyaz' (Radio and Communication); 1991 (Russian).

⁸⁴ Betskii OV. Biological effects of low-intensity millimetre waves (Review). *Journal of Biomedical Electronics.* 2015(1):31-47. <http://www.radiotec.ru/article/15678>. Accessed July 31, 2018.

International Appeal: Stop 5G on Earth and in Space

- ⁸⁵ Albanese R, Blaschak J, Medina R, Penn J. Ultrashort electromagnetic signals: Biophysical questions, safety issues and medical opportunities," *Aviat Space Environ Med.* 1994;65(5 Supp):A116-A120. www.dtic.mil/dtic/tr/fulltext/u2/a282990.pdf. Accessed June 18, 2018.
- ⁸⁶ Pepe D, Aluigi L, Zito D. Sub-100 ps monocycle pulses for 5G UWB communications. 10th European Conference on Antennas and Propagation (EuCAP). 2016;1-4. doi: [10.1109/EuCAP.2016.7481123](https://doi.org/10.1109/EuCAP.2016.7481123).
- ⁸⁷ Nasim I, Kim S. Human exposure to RF fields in 5G downlink. arXiv:1711.03683v1. <https://arxiv.org/pdf/1711.03683>. Accessed June 17, 2018.
- ⁸⁸ Thielens A, Bell D, Mortimore DB. Exposure of insects to radio-frequency electromagnetic fields from 2 to 120 GHz. *Nature/Scientific Reports.* 2018;8:3924. <https://www.nature.com/articles/s41598-018-22271-3.pdf>. Accessed June 17, 2018.
- ⁸⁹ Hallmann CA, Sorg M, Jongejans E. More than 75 percent decline over 27 years in total flying insect biomass in protected areas. *PLOS One.* 2017;12(10):e0185809. <http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0185809&type=printable>. Accessed June 17, 2018.
- ⁹⁰ Gandhi O, Riaz A. Absorption of millimeter waves by human beings and its biological implications. *IEEE Trans Microw Theory Tech.* 1986;34(2):228-235. doi:10.1109/TMTT.1986.1133316.
- ⁹¹ Russell CL. 5G wireless telecommunications expansion: Public health and environmental implications. *Environ Res* 2018;165:484-495. <https://zero5g.com/wp-content/uploads/2018/07/5-G-wireless-telecommunications-expansion-Public-health-and-environmental-implications-Cindy-L.-russell.pdf>. Accessed November 1, 2018.
- ⁹² Hardell L. World Health Organization, radiofrequency radiation and health - a hard nut to crack (review). *Int J Oncol.* 2017;51:405-413. doi:10.3892/ijo.2017.4046.
- ⁹³ Pall M. 5G: Great risk for EU, U.S. and international health: Compelling evidence for eight distinct types of great harm caused by electromagnetic field (EMF) exposures and the mechanism that causes them. European Academy for Environmental Medicine. http://www.5gappeal.eu/wp-content/uploads/2018/06/pall_2018.pdf. Published May 2018. Accessed June 22, 2018.
- ⁹⁴ Markov M, Grigoriev Y. Wi-Fi technology: An uncontrolled global experiment on the health of mankind, *Electromagn Biol Med.* 2013;32(2):200-208. http://www.avaate.org/IMG/pdf/Wi-fi_Technology_-_An_Uncontrolled_Global_Experiment_on_the_Health_of_Mankind_-_Marko_Markov_Yuri_G._Grigoriev.pdf. Accessed June 23, 2018.
- ⁹⁵ Belyaev I, Alipov Y, Shcheglov V, Polunin V, Aizenberg O. Cooperative response of Escherichia coli cells to the resonance effect of millimeter waves at super low intensity. *Electromagn Biol Med.* 1994;13(1):53-66. doi:10.3109/15368379409030698.
- ⁹⁶ Belyaev I. Nonthermal biological effects of microwaves: Current knowledge, further perspective, and urgent needs. *Electromagn Biol Med.* 2005;24(3):375-403. doi:10.1080/15368370500381844.
- ⁹⁷ Bise W. Low power radio-frequency and microwave effects on human electroencephalogram and behavior. *Physiol Chem Phys.* 1978;10(5):387-398.
- ⁹⁸ Brauer I. Experimentelle Untersuchungen über die Wirkung von Meterwellen verschiedener Feldstärke auf das Teilungswachstum der Pflanzen. *Chromosoma.* 1950;3(1):483-509. doi:10.1007/BF00319492.
- ⁹⁹ Kondra P, Smith W, Hodgson G, Bragg D, Gavora J, Hamid M. Growth and reproduction of chickens subjected to microwave radiation. *Can J Anim Sci.* 1970;50(3):639-644. doi:10.4141/cjas70-087.
- ¹⁰⁰ Frey AH, Seifert E. Pulse modulated UHF energy illumination of the heart associated with change in heart rate. *Life Sciences.* 1968;7(10 Part 2):505-512. doi: 10.1016/0024-3205(68)90068-4.
- ¹⁰¹ Mann K, Röschke J. Effects of pulsed high-frequency electromagnetic fields on human sleep. *Neuropsychobiology.* 1996;33(1):41-47. doi: 10.1159/000119247.
- ¹⁰² Tiagin NV. *Clinical aspects of exposure to microwave radiation.* Moscow: Meditsina; 1971 (Russian).
- ¹⁰³ 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. *Rev Environ Health* 2015;30(4):251–271. <https://www.irseco.com/wp-content/uploads/Belpomme-Environmental-health-2015.pdf>. Accessed June 18, 2018.

International Appeal: Stop 5G on Earth and in Space

¹⁰⁴ Hecht K. *Health Implications of Long-term Exposure to Electromog*. Competence Initiative for the Protection of Humanity, the Environment and Democracy. 2016: 16, 42-46. http://kompetenzinitiative.net/KIT/wp-content/uploads/2016/07/KI_Brochure-6_K_Hecht_web.pdf. Accessed June 20, 2018.

¹⁰⁵ Belyaev I, Dean A, Eger H, et al. EUROPAEM EMF Guideline 2016 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses. *Rev Environ Health*. 2016;31(3):363-397. doi:10.1515/reveh-2016-0011.

¹⁰⁶ Schreier N, Huss A, Rösli M. The prevalence of symptoms attributed to electromagnetic field exposure: A cross-sectional representative survey in Switzerland. *Soz Präventivmed*. 2006;51(4):202-209. doi:10.1007/s00038-006-5061-2. Accessed July 16, 2018.

¹⁰⁷ Schroeder E. Stakeholder-Perspektiven zur Novellierung der 26. BImSchV: Ergebnisse der bundesweiten Telefonumfrage im Auftrag des Bundesamtes für Strahlenschutz (Report on stakeholder perspectives on amending the 26th Federal Emission Control Ordinance: Results of the nationwide telephone survey ordered by the Federal Office for Radiation Protection). Schr/bba 04.02.26536.020. Munich, Germany. 2002 (German). https://www.bfs.de/SharedDocs/Downloads/BfS/DE/berichte/emf/befuerchtungen.pdf?__blob=publicationFile&v=3. Accessed July 19, 2018.

¹⁰⁸ Hallberg Ö, Oberfeld G. Letter to the editor: Will we all become electrosensitive? *Electromagn Biol Med*. 2006;25:189-191. https://www.criirem.org/wp-content/uploads/2006/03/ehs2006_hallbergoberfeld.pdf. Accessed June 22, 2018.

¹⁰⁹ Brussels International Scientific Declaration on Electromagnetic Hypersensitivity and Multiple Chemical Sensitivity. ECRI Institute. http://eceri-institute.org/fichiers/1441982765_Statement_EN_DEFINITIF.pdf. Published 2015. Accessed June 10, 2018.

¹¹⁰ Removal of barriers to entry, 47 U.S.C. § 253. www.gpo.gov/fdsys/pkg/USCODE-2015-title47/pdf/USCODE-2015-title47-chap5-subchapII-partII-sec253.pdf; *5G For Europe: An Action Plan*. European Commission; 2016. http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=17131. Accessed June 10, 2018.

¹¹¹ Federal Register – Rules and Regulations. 47 CFR Part 1 [WT Docket No 17–79; FCC 18–30] [Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment](#). 2018;83(86). Accessed June 10, 2018.

¹¹² *5G For Europe: An Action Plan*. European Commission; 2016. http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=17131. Accessed June 10, 2018.

¹¹³ PCIA – The Wireless Infrastructure Association. Model wireless telecommunications facility siting ordinance. 2012. https://wia.org/wp-content/uploads/Advocacy_Docs/PCIA_Model_Zoning_Ordinance_June_2012.pdf. Accessed June 29, 2018.

¹¹⁴ Mobile services, 47 U.S.C. § 332(c)(7)(B)(iv). www.gpo.gov/fdsys/pkg/USCODE-2016-title47/pdf/USCODE-2016-title47-chap5-subchapIII-partI-sec332.pdf: “No state or local government or instrumentality thereof may regulate personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the [Federal Communications] Commission’s regulations concerning such emissions.” Courts have reversed regulatory decisions about cell tower placement simply because most of the public testimony was about health.

¹¹⁵ *Cellular Telephone Company v. Town of Oyster Bay*, 166 F.3d 490, 495 (2nd Cir. 1999). <https://openjurist.org/166/f3d/490/cellular-telephone-company-at-v-town-of-oyster-bay>. Accessed June 10, 2018.; *T-Mobile Northeast LLC v. Loudoun County Bd. of Sup’rs*, 903 F.Supp.2d 385, 407 (E.D.Va. 2012). <https://caselaw.findlaw.com/us-4th-circuit/1662394.html>. Accessed June 10, 2018.

¹¹⁶ Vogel G. A Coming Storm For Wireless? *TalkMarkets*. July 2017. www.talkmarkets.com/content/stocks--equities/a-coming-storm-for-wireless?post=143501&page=2. Accessed September 13, 2018.

¹¹⁷ Swiss Re: SONAR - New emerging risk insights. July 2014:22. http://media.swissre.com/documents/SONAR_2014.pdf. Accessed June 10, 2018. “[A]n increasing level of interconnectivity and the growing prevalence of digital steering and feedback systems also give rise to new vulnerabilities. These could involve cascading effects with multiple damages as well as long-lasting interruptions if the problems turned

International Appeal: Stop 5G on Earth and in Space

out to be complex and/or difficult to repair. Interconnectivity and permanent data generation give rise to concerns about data privacy, and exposure to electromagnetic fields may also increase.”

¹¹⁸ Albert Einstein, letter to Max Born, Dec. 4, 1926.

¹¹⁹ Active Denial Technology. Non-Lethal Weapons Program. <https://jnlwp.defense.gov/Press-Room/Fact-Sheets/Article-View-Fact-sheets/Article/577989/active-denial-technology/>. Published May 11, 2016. Accessed June 10, 2018.

¹²⁰ Conflicts of interest have frequently arisen in the past. For example, the [EU Commission \(2008/721/EC\)](#) appointed [industry-supportive members for SCENIHR](#) who submitted to the EU [a misleading SCENIHR report](#) on health risks, which gave the [telecommunications industry carte blanche to irradiate](#) EU citizens. The report is now quoted by radiation safety agencies in the EU. Another example is the US National Toxicology Program contracting with the IT'IS Foundation, which is [funded by the entire telecommunications industry](#), to design, build and monitor the exposure facility for a two-year, 25-million-US-dollar study of cell phones. It subsequently produced a [misleading report](#) that is now quoted by industry officials in the US.

¹²¹ Ross M, Mills M, Toohey D. Potential climate impact of black carbon emitted by rockets. *Geophys Res Lett*. 2010;37:L24810. <https://agupubs.onlinelibrary.wiley.com/doi/pdf/10.1029/2010GL044548>. Accessed June 17, 2018.

¹²² Ross MN, Schaeffer PM. Radiative forcing caused by rocket engine emissions. *Earth's Future*. 2014;2:177-196. <https://agupubs.onlinelibrary.wiley.com/doi/epdf/10.1002/2013EF000160>. Accessed June 17, 2018.

¹²³ Callicott JB, Mumford K. Ecological sustainability as a conservation concept. *Conservation Biology*. 1997;11(1):32-40. https://www.sierraforestlegacy.org/Resources/Community/Sustainability/SY_CallicottMumford1997.pdf. Accessed June 20, 2018.



City of Glendale
Community Development Department
633 N Broadway #101
Glendale, CA 91206
(818) 548-3200

09/06/2023 09:04AM npazuki
00024 0003 000303036
Payment Effective Date 09/06/2023

INVOICE

, MASHI, PATRICK AND KARINA
External Item Reference: INV-00019405
External Payment Reference: REC-016975-
2023
2023 Item: INV-00019405

Section 2: Planning Fees (3) Appeals to Planning C	2,000.00

	2,000.00
Subtotal	2,000.00
Total	2,000.00
CHECK	2,000.00
Check Number 5197	

Change due	0.00

Paid by: , MASHI, PATRICK AND KARINA



Thank you for your payment

City of Glendale COPY
CITY OF GLENDALE RECEIPT