

Before the
Federal Communications Commission
Washington DC 20554

In the Matter of:)	
)	
Petition for Rulemaking on the)	RM 12003
Commission's Rules Part 1, Subpart 1,)	
Implementing NEPA)	

**COMMENTS OF WIRED BROADBAND, INC.
ON BEHALF OF AMERICANS INJURED AND DISABLED
FROM ELECTROMAGNETIC RADIATION
(ELECTROMAGNETIC RADIATION SYNDROME – EMR-S)**

April 30, 2025

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FILING PARTIES

The parties listed in Appendix B (attached hereto and incorporated herein by this reference) collectively constitute the “Filing Parties,” have granted permission to submit these Comments on their behalf, and join together to submit these Comments.

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Executive Summary

Wired Broadband, Inc., on behalf of Americans injured or disabled by electromagnetic radiation, and the Filing Parties set forth in Appendix A, respectfully submit these comments. The Filing Parties and partner groups have a reach of about one-hundred fifty thousand people across the country. We advocate for the safe deployment of communications infrastructure.

We disagree with every aspect of the CTIA petition to The National Environmental Policy Act (NEPA) as it runs contrary to the letter and spirit of NEPA. NEPA's overarching goal is to protect the human environment,¹ and the FCC's role is to prevent the irresponsible deployment of communications infrastructure that would endanger the human environment in its statutory mandate "to protect life and property."² There is no greater proof of the environmental impact of wireless facilities than those people who have been injured, repeatedly, and permanently disabled by exposure to electromagnetic radiation emitted from the wireless facilities that are the subject of the petition. whose symptoms are referred to as Electromagnetic Radiation Syndrome (EMR-S) and who have joined herein as Filing Parties.

The petition has lost sight of these goals and it is the FCC's statutory responsibility to ensure those goals are met. An antenna structure, whether or not it requires registration, may yet have an environmental impact and deeming it, as the petition requests, outside of a "major federal action" (MFA) would not lessen the environmental impact. Moreover, the "clear timelines" and "predictable standards" of which the petition is also in pursuit for the review of wireless facilities applications on the local level would subject local governments to a heavy-handed "big government" approach, hamstrung by Washington, D.C. Therefore, the petition should be considered "dead on arrival."

These comments will address the following: (1) NEPA should be rigorously enforced and the FCC should shore up, not diminish compliance, (2) the FCC should prevent the irresponsible deployment of communications infrastructure that would endanger the human environment in its statutory mandate under the Telecommunications Act of 1996 "to protect life and property,"³ (3) major federal actions (MFA), (4) the biological effects of radio frequency (RF) radiation emitted from the wireless facilities that are the subject of the petition, (5) the human environment of those people with Electromagnetic Radiation Syndrome (EMR-Syndrome or EMR-S) as well as the general public who are being involuntarily exposed to RF radiation from the wireless facilities that are the subject of the petition, and (6) potential constitutional violations of "streamlining" permitting process.

¹ 42 USC §4321.

² Communications Act of 1934, as amended by the Telecommunications Act of 1996, 47 USC §151 *et seq.*

³ *Ibid.*

(1) NEPA should be rigorously enforced and the FCC should shore up, not diminish, its efforts to do so

NEPA's purpose is to "stimulate the health and welfare of man," and regulate the safety of the human environment.⁴ There is no statutory leeway for the FCC to diminish its NEPA enforcement. Among environmental effects that the FCC is obligated to consider under NEPA are exposure to radiofrequency (RF) radiation. FCC enforcement of NEPA should, therefore, be shored up.

The FCC should set "standards" of compliance for broadband deployment based on protecting the human environment, as there is no excuse for non-compliance with NEPA since its enactment over 55 years ago in 1970. For instance, any cost-benefit analysis cannot be reduced to simply corporate profit and loss, without taking into account the negative externalities created by the FCC's decisions and the actions of wireless providers.⁵

The FCC's compliance with NEPA and its mandate under the Communications Act is to serve the public interest and to "protect life and property" which is the benefit side of the equation, while anything that would detract from that would be a cost and a negative to that equation. We recommend the FCC take into account negative externalities, such as adverse biological effects (both cancer and non-cancer)⁶ to the public and the environment in which we live (our trees, parks, plants,⁷ soil and microbiome⁸), decrease in property values as people don't want to live near cell towers,⁹ the risk of cell tower fires that have already caused or contributed to massive devastation.¹⁰

For example, there were four notable fires in California that were started in whole or in part by failures or overload of telecommunications equipment. The Guejito Fire in San Diego in 2007,

⁴ 42 USC §4321

⁵ <https://www.fcc.gov/ecfs/document/104090450425149/1>.

⁶ <https://ehtrust.org/science-on-health-risks-of-cell-towers-5g-exposure-small-cell-densification-and-new-wireless-networks/>.

⁷ Ibid.

⁸ Effect of Mobile Tower Radiation on Microbial Diversity in Soil and Antibiotic Resistance, published by IEEE, March 14, 2019, <https://ieeexplore.ieee.org/document/8665432>.

⁹ <https://ehtrust.org/new-research-cell-towers-near-homes-drop-property-values/>.

¹⁰ https://thenationalcall.org/wp-content/uploads/2024/04/fires_telecom-fed-wireless-bills_R13r2.pdf, <https://www.ourweb.tech/fires-and-collapses/>.

¹¹ the Malibu Canyon Fire in 2007,¹² the Silverado Fire in 2020, and the Woolsey Fire in 2018 being the worst in California history.¹³ The Guejito Fire in San Diego in 2007 was started by a faulty communications lashing wire. This fire merged into the Witch Creek Fire which became the largest and deadliest in San Diego history, and also forced the largest mass evacuation in California history.¹⁴ A 2022 fire report encapsulated the problem in Los Angeles: “Protecting L.A. County’s Future: How Fire Risks From Telecommunications Equipment, Climate Challenges & **A Dangerous Shift Away From Environmental Review** Threaten Los Angeles County’s Future.”¹⁵

Many instances of cell tower fires abound.¹⁶ In 2021 in Brooklyn, the cause of fire on an apartment building rooftop was reported to be caused by an “electrical malfunction of a cell tower on the roof of a building.”¹⁷ In Hanover, VA in 2020, a cell tower was engulfed in flames which officials believed to have been caused by electrical/mechanical issues.¹⁸ In Chula Vista, CA in 2021, a cell tower at a school stadium burst into flames, and while firefighters were waiting for the power to be shut off, it had become molten plasma.¹⁹ The incident report stated the reason as “electrical arcing,” which means that the temperature can reach as high as 35,000 degrees Fahrenheit, three times the estimated temperature of the sun’s surface.

¹¹ Protecting La County’s Future: How Fire Risks From Telecommunications Equipment, Climate Challenges & A Dangerous Shift Away From Environmental Review Threaten Los Angeles County’s Future, Susan Foster, November 15, 2022, p. 11.

¹² *California Public Utilities Commission, Incident Investigation Report*, 10/21/2008, at 6, http://file.lacounty.gov/SDSInter/bos/bc/115889_ReportBack-BoardMotion60A-SessionWildfireReport.pdf.

¹³ *City of Los Angeles, After Action Review of the Woolsey Fire Incident*, Citigate Associates, LLC, Nov. 17, 2019, at 4, <http://file.lacounty.gov/SDSInter/bos/supdocs/144968.pdf>; Guest Commentary: Is 5G a Potential Fire Hazard?, Tony Simmons, P.E., *The Aspen Times*, June 13, 2021, <https://www.aspentimes.com/opinion/guest-commentary-is-5g-a-potential-fire-hazard/>.

¹⁴ PROTECTING LA COUNTY’S FUTURE: HOW FIRE RISKS FROM TELECOMMUNICATIONS EQUIPMENT, CLIMATE CHALLENGES & **A DANGEROUS SHIFT AWAY FROM ENVIRONMENTAL REVIEW** THREATEN LOS ANGELES COUNTY’S FUTURE, Susan Foster, November 15, 2022, p. 11 at <https://www.dropbox.com/scl/fi/oo5t2fdclhvz0ms9o1hp/PROTECTING-LA-COUNTY-White-Paper-11-15-22.pdf?rlkey=0isp56uiurbt4owz628gayrc4&st=rfar6lsn&dl=0>.

¹⁵ *Ibid.*

¹⁶ <https://ehtrust.org/cell-tower-safety-risks-fires-and-collapse/>.

¹⁷ *Fire on Rooftop With Cell Antennas in Brooklyn* *New York*, Apr 19, 2021, <https://ehtrust.org/firecell-tower-brooklyn-new-york/>.

¹⁸ *Hanover cell tower catches fire*, NBC 12 Newsroom, June 26, 2020, <https://www.nbc12.com/2020/06/26/cell-phone-tower-hanover-catches-fire/>.

¹⁹ <https://thenationalcall.org/resources/> below the fold at “Additional Valuable Resources,” see “Cell Towers & Fires.”

The tower also collapsed onto the bleachers near a football field, burning the track and, destroying the bleachers.

Other negative externalities are the economic costs of chronic disease associated with RF radiation. A February 2025 report states that:

“Of the 36 chronic diseases and conditions that more than doubled (1990-2015), the U.S. Navy study [referring to the Naval Medical Research Institute study of RF radiation in 1971²⁰] warned us of the connection between wireless radiation and twenty-three of those chronic diseases, predicting what has indeed happened to the health of Americans . . . By ignoring the earlier science, U.S. regulators failed to protect the American people from the dangers of wireless technologies. In doing so, they imposed millions of unnecessary chronic exposure conditions on the American public. By 2015, the 23 diseases the U.S. Navy predicted may have added more than \$2 trillion in annual health care costs to the U.S. economy due to their negligence.”²¹

The FCC should also consider the negative externalities of the burden of regulation that the petition seeks to create at the state and local level. Every rule issued by the FCC obliges state and local governments across the country to spend countless hours creating their own local ordinances, regulations, procedures, and ongoing paperwork to comply with FCC so-called “streamlining” orders. In reality, those FCC orders do the opposite – they inevitably create an overwhelming thicket of local regulations. We would not be surprised if for every 100 pages of FCC rules, they create 100,000 or even 1 million pages of regulations at the local level.²² The FCC should not cherry pick removal of regulations that limit industry conduct, while increasing regulations that interfere with state and local government rights.

To serve the public interest and to comply with NEPA, the FCC will need to dedicate resources and personnel with a designated senior official and chief engagement officer and reverse course on non-compliance with federal law and exercise oversight and tracking of all cell towers in the United States, regardless of size, including industry environmental assessments and mitigation.²³ In reversing course to comply with federal law, the FCC will need to “provide adequate notice and opportunities for public comment on projects,” “make environmental

²⁰ https://www.magdahavas.com/wp-content/uploads/2010/06/Navy_Radiowave_Brief.pdf.

²¹ “Safety of Wireless Technologies, A Scientific View, Feb. 2025,” <https://electromagnetichealth.org/wp-content/uploads/2025/02/FINAL-Wireless-Paper-1.pdf>.

²² Assumes roughly 20,000 incorporated towns and cities, plus over 3000 counties, in the United States.

²³ <https://peer.org/commentary-what-the-fcc-must-do-to-comply-with-new-nepa-rules/>.

documents, such as radiofrequency (RF) emissions studies, readily accessible to the public,” “vigorously enforce its NEPA rules” to reverse course on industry non-compliance, and rather than dismissing public comments incorporate them in its rules and policies.²⁴

General Note on NEPA: As a general note, for every rule change or deletion that the FCC makes or seeks to make, whether arising from this docket or any other docket, such change or deletion should be treated as a major federal action and undergo review under the National Environment Policy Act (NEPA). NEPA Section 106 states:

“An agency shall issue an environmental impact statement with respect to a proposed agency action requiring an environmental document that has a reasonably foreseeable significant effect on the quality of the human environment.”²⁵

NEPA review includes consideration not only of impacts on natural resources and ecosystems, such as agriculture and agricultural yields, but also on human health. To date, the FCC has virtually ignored the nonthermal impacts of radiofrequency radiation on humans and the environment. The Commission is arguably already in breach of NEPA by having issued so many regulations without subjecting these regulations to NEPA review. The FCC must do its part to contribute to the Trump Administration’s commitment to Make America Healthy Again; this starts with reviewing the potential impact of *every* one of its contemplated actions on humans and the environment. Furthermore, despite the deletion of CEQ rules,²⁶ FCC remains obligated to follow its statutory regulations under NEPA. In fact the interim final rule issued by CEQ deleting the current rules stated:

Rather, NEPA requires Federal agencies to consider the environmental effects of proposed actions as part of agencies' decision-making processes.²⁷

As an example, the FCC seeking to “streamline” the spectrum allocations requires NEPA review to assess whether these spectrum actions will increase the densification, exposure levels, or exposure types of radiofrequency radiation in the environment, and if so the impacts on humans and the environment from such action. As a further example, any expansion of wireless facilities under Section 6409 would have a similar effect.

²⁴ <https://peer.org/commentary-fcc-fails-follow-environmental-laws/> .

²⁵ 42 USC 4336

<https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title42-section4336&num=0&edition=preli>

²⁶ <https://www.federalregister.gov/documents/2025/02/25/2025-03014/removal-of-national-environmental-policy-act-implementing-regulations>

²⁷ Ibid I.A.

(2) The FCC should prevent the irresponsible deployment of communications infrastructure that would endanger the human environment in its statutory mandate “to protect life and property”²⁸

Under the Communications Act of 1934 and the Telecommunications Act of 1996 (TCA), the FCC’s jurisdictional guardrails are clear: to act in the public interest; and its legal mandate is clear: “to promote safety of life and property through the use of wire and radio communication.”²⁹ Communications infrastructure is there to serve the public interest. What industry wants and what this petition seeks in “facilitate[ing] wireless broadband deployment” is not necessarily in the public interest.

The petition implicates FCC’s statutory obligations under the TCA, namely maintaining cooperative federalism. The “clear timelines” and “predictable standards” cited in the petition for the review of wireless facilities applications on the local level would subject local governments to a heavy-handed “big government” approach, hamstrung by Washington, D.C.

The petition suggests that local governments and the residents that they represent are an impediment to successful broadband deployment, especially in light of Broadband, Equity, Access, and Deployment (BEAD) funding. To borrow from the sentiments of various organizations including those representing mayors, cities and counties, in a similar context:

“This simply isn’t true. Local governments are partners with the telecommunications industry, working together to safely, securely, and successfully deploy telecommunications infrastructure in our cities and counties in a timely and efficient manner. We not only partner with our rights-of-way to ensure that disruptions to infrastructure such as roads are minimized, but we are working collaboratively to ensure that together, we deliver on the promise of internet for all Americans as we work with our State Broadband Offices on each of our broadband plans.”³⁰

The FCC should be fostering local coordination. For example, local coordination has been a significant component of the National Telecommunications and Information Administration’s

²⁸ Communications Act

²⁹ See 47 USC 151 at <https://www.law.cornell.edu/uscode/text/47/151>; see also 47 USC 332 <https://www.law.cornell.edu/uscode/text/47/332>.

³⁰ Letter to House leadership opposing HR 3557 in the 118th Congress, joined by National League of Cities (NLC), the U.S. Conference of Mayors (USCM), the National Association of Counties (NACo) and the National Association of Telecommunications Officers and Advisors (NATOA) (hereinafter, NATOA et al), 9-18-24 at <https://www.natoa.org/news/joint-letter-to-house-leadership-reiterating--opposition-to-hr-3557>.

(NTIA) BEAD Program “because of this very essential relationship between local governments and internet service providers.”³¹

The petition fosters the myth that increasing federal preemption:

“will unlock lower prices and improve the quality of broadband offerings available in the United States. There’s no proof that any of these conditions happened in states where local governments were pre-empted. States such as Texas have not demonstrated any benefits from a statewide law compared to other states . . . ”³²

Local governments have an interest in broadband network deployment for its residents that is robust and affordable. The Communications Act preserves local authority over the use of pole attachments (Sec. 224), rights-of- way (ROW) (Sec. 253) and the siting of wireless infrastructure (Sec. 332(c)). As local government is closest to the people than either the FCC or providers, it must have the right to manage the ROW, which also include other utilities, not just telecom equipment, for purposes of public safety. This is “critical to conduct responsible stewardship of public property, protect public safety, and preserve the rights of residents as consumers of broadband services.”³³

For instance, local, state and federal government stakeholders and industry and internet service provider (ISP) stakeholders are already collaborating. The findings are in a report: Permitting Success: Closing the Digital Divide Through Local Broadband Permitting.³⁴ A main issue has been the lack of staff and resources. “The Report reflects the acknowledgement by industry and other stakeholders that local permitting is important to protect public safety and the diverse values of communities.”³⁵ The petition would serve no purpose but to destroy this ecosystem.

³¹ Ibid.

³² Ibid.

³³ Ibid.

³⁴ See <https://www.benton.org/publications/permitting-success>. Participants included Lumen, NCTA - The Internet & Television Association, Dycom Industries, Fiber Broadband Association, Brightspeed, NTCA -The Rural Broadband Association, Google Fiber, WTA - Advocates for Rural Broadband, Ting Internet, National Rural Electric Cooperative Association and US Telecom.

³⁵ Letter to House leadership opposing HR 3557 in the 118th Congress, joined by National League of Cities (NLC), the U.S. Conference of Mayors (USCM), the National Association of Counties (NACo) and the National Association of Telecommunications Officers and Advisors (NATOA) (hereinafter, NATOA et al), 9-18-24 at <https://www.natoa.org/news/joint-letter-to-house-leadership-reiterating--opposition-to-hr-3557>.

As to communities who do not want or need cell towers, the FCC needs to ensure that its federal preemption powers are not abused to bulldoze through those communities and jettisoning their final determinations on the well-being of their communities.³⁶

Since the petition seeks to invoke federal preemption to “facilitate” wireless broadband deployment, it may be viewed as discriminating against wired broadband deployment as there is no mention of it while seeking preferential treatment for wireless. If two technologies or services are not equivalent, forcing states to treat them as equivalent is actually **discriminatory** to the superior service, especially if preference is given to the inferior service. In effect, this petition is silent on the inferiority of wireless and treats it as equal or qualifying for preferential treatment over wired. The losers of this calculus will be local, including rural, residents, as their state broadband offices will not have the flexibility to ensure they have the best available broadband.

A brief word on what has been bandied about as “technology neutral” that deems wireless and wired as equivalent technologies. They are not. Former FCC Chair Tom Wheeler (former CEO of CTIA) testified that fiber is future proof with **wireless only as a last resort**.³⁷ Wireless is inferior in every way compared to wired, e.g., 5G will never be as fast, reliable, secure or safe as fiber, short life span of wireless of up to 5 yrs, constant maintenance. Wheeler states that “[t]he nature of 5G networks exacerbates the cybersecurity threat,”³⁸ and has coined the term “the 5G CyberParadox.”³⁹

To be clear, wired and wireless technologies are not equivalent technologies and the costs of wireless deployment outweigh the benefits. Deeming wired and wireless to be “technology neutral” does not rectify this infirmity. Wireless is not a substitute for wired broadband.

1. Wireless infrastructure’s lifespan is only five years, making it a poor use of taxpayer subsidies whereas fiber lasts 25-50 years.⁴⁰ As between wireless and

³⁶ See, e.g., <https://ehtrust.org/cell-towers-near-schools-and-homes-that-have-been-removed-halted-and-rejected/>.

³⁷ Tom Wheeler’s Testimony to Congress, https://energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Witness%20Testimony_Wheeler_FC_2021.03.22.pdf.

³⁸ <https://www.wita.org/nextgentrade/why-5g-requires-new-approaches-to-cybersecurity/>.

³⁹ “Why 5G Requires New Approaches to Cybersecurity,” Tom Wheeler and David Simpson, Brookings Institute, Sept 3, 2019, <https://www.wita.org/nextgentrade/why-5g-requires-new-approaches-to-cybersecurity/>.

⁴⁰ Tom Wheeler, former FCC chair and former CEO of CTIA, testified in 2021 that fiber is future proof with **wireless only as a last resort**, <https://democrats-energycommerce.house.gov/sites/evo-subsites/democrats->

fiber, fiber has been found to be “the most fiscally prudent expenditure of public funds in most circumstances because of its longevity and technical advantages.”⁴¹

2. Billions of dollars in subsidies to wireless have not provided the promised ubiquitous service, according to former CTIA CEO and former FCC Chair, Tom Wheeler.⁴²
3. Wireless suffers from line-of-sight obstructions, slower speed, inclement weather, lack of scalability, lack of cybersecurity, thereby making it unreliable in emergencies.
4. “[F]ixed-wireless networks have inherent capacity limitations that sharply limit the number of users on a network using a given amount of spectrum.”⁴³
5. Upfront capital costs for fiber may be higher, but after 30 years, they are comparable to wireless.⁴⁴
6. Wired infrastructure is cheaper over the life of the infrastructure.⁴⁵ Fixed wireless costs are higher than fiber because of the ongoing need to regularly replace wireless equipment, with 40% to 80% of its capital investment needing to be replaced every five years. In contrast, only 1% to 10% of capital investment in a fiber network needs to be replaced every 10 years (fiber’s life span is 50-70 years). Fixed wireless network providers must re-invest every five years to maintain the network. That is not sustainable in the long-run.

The free market economy has spoken, and two-thirds of Americans prefer fiber to the premises.⁴⁶ When the Affordable Connectivity Program (ACP) ended, wireline services

energycommerce.house.gov/files/documents/Witness%20Testimony_Wheeler_FC_2021.03.22.pdf

Fixed Wireless Technologies and Their Suitability for Broadband Delivery, June 2022
<https://www.benton.org/publications/FixedWireless>.

⁴¹ <https://www.benton.org/publications/FixedWireless>.

⁴² In testimony to the House Energy and Commerce Committee, March 2021, former FCC Chair and former CTIA CEO Tom Wheeler spoke disappointingly that despite approximately \$40 billion of government subsidies “over the last decade,” those subsidies “have failed to deliver the goal of universal access to high-speed broadband ... because it failed to insist on futureproof technology, ... and focused more on the companies being subsidized than the technology being used or the people who were supposed to be served.”

⁴³ <https://www.benton.org/blog/how-fixed-wireless-technologies-compare-fiber>.

⁴⁴ <https://www.benton.org/publications/FixedWireless>.

⁴⁵ <https://www.benton.org/blog/how-fixed-wireless-technologies-compare-fiber>.

⁴⁶ <https://www.fibre-systems.com/article/fiber-connect-2023-two-thirds-us-consumers-prefer-fibre?iframe=1>; see also, “The Market Has Spoken,” Fiber Broadband Association, https://5217051.fs1.hubspotusercontent-na1.net/hubfs/5217051/Events/IQGeo%20Meetup%202022%20-%20Denver/Meetup%20Day%201%20presentations/2_FBA%20Keynote_The_market_has_spoken.pdf

retained 90% of subscribers while wireless services lost 80% and satellite services also had losses.⁴⁷ Over 90% of Americans won't buy or rent a home near a cell tower.⁴⁸ Without competition, there is no societal benefit to ensure that the best products and services with product liability to ensure that for-profit corporations compete on safety. True advancement in technology occurs when there is accountability and where technology benefits society, and not industry at the expense of society.

The petition seeks to streamline the permitting process which really means overruling local government and imposing heavy-handed regulations on local governments. This lop-sided approach rewards market inefficiencies, including market failure and market distortion, where the public is compelled to be exposed to a product or service that they do not want or need, and distorts market forces of supply and demand. Industry should compete on safety to counter market inefficiencies and focus on reducing negative externalities. Local government is in the best position to determine the responsible deployment of communications infrastructure in their community, not industry.

As an analogy, imagine if federal highway dollars required state departments of transportation to treat vehicle and bicycle traffic on a technology neutral basis when allocating road construction dollars. Bicycles can go 20 mph and vehicles 65 mph, roughly 3x faster. By comparison, wireless struggles to meet upload speeds of 20 Mbps, whereas fiber can already handle 2000 Mbps upload speed, which is 100x faster. And once deployed, fiber infrastructure can scale to *tens of thousands* of times faster with minimal upgrades. Of course, this ignores the fact that a traveler has to pedal very hard to maintain 20 mph, may have difficulty going uphill, or in inclement weather. Treating these modes of transportation equally would be discriminatory.

That wireless providers cannot meet the same standards may be one reason for the petition to seek intervention and preferential treatment from the FCC.

(3) Major Federal Actions (MFAs)

A wireless facility, even if unregistered, is a major federal action. The argument that the FCC does not have substantial control is unavailing. The point is that industry is using licensed spectrum from the FCC, the ongoing licensure of which is a major federal action, without

[oken_IQGeo_Meetup_2022.pdf?hsCtaTracking=72374350-4b3e-455a-b8ed-031e09618cd7%7Ced1704fb-9b86-4c4b-a0a6-7f7d6b47b5de.](#)

⁴⁷ <https://broadbandbreakfast.com/acp-fallout-wireline-retains-most-wireless-and-satellite-face-major-losses/>.

⁴⁸ <https://www.emfanalysis.com/property-values-declining-cell-towers/?iframe=1&iframe=1&iframe=1>.

which there would be no deployment, whether the facility is registered or unregistered. The wireless facility will, nonetheless, expose the public to wireless radiation which the FCC is supposed to regulate and for which the FCC is accountable to the public for safety. We disagree with the petition's enhancing preemption which is essentially promoting a wireless agenda.

Moreover, CTIA concedes that the FCC has oversight and enforces RF radiation emissions of facilities that are subject to geographic licenses (Petition, fn 63), thereby undercutting CTIA's argument. Authorizing spectrum use in any given location is already deemed a major federal action, even if the exact location may not yet be known at the time of authorization.⁴⁹

(4) Biological effects of RF radiation emitted from wireless facilities

It should be noted that in his MAHA Commission Executive Order, President Trump has made it a national priority to include the study of the **effects of "electromagnetic radiation"** in connection with the **chronic disease epidemic**.⁵⁰ Any FCC rules that diminish protecting the human environment under this petition puts the FCC in **direct opposition** with the White House MAHA Commission's priorities and the Secretary of HHS's priorities.⁵¹

A summary of the biological hazards of RF radiation are set forth in **Appendix A**, attached hereto and incorporated herein by this reference. The World Health Organization (WHO) published a review in February 2025 linking electromagnetic radiation to high risk of cancer, especially of the heart and brain.⁵² That updates its 2011 classification of electromagnetic radiation as a Class 2B possible carcinogen.

It is estimated that at least 30% of the population is afflicted from this radiation poisoning and about 1% is severely disabled that they can no longer work or live in areas that have this

⁴⁹ See Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, 11 FCC Rcd 15123 (1996) ("First Order"); Procedures for Reviewing Requests for Relief from State and Local Regulations Pursuant to Section 332(c)(7)(B)(v) of the Communications Act of 1934, 12 FCC Rcd 13494 (1997) ("Second Order").

⁵⁰ See §4a

<https://www.federalregister.gov/documents/2025/02/19/2025-02871/establishing-the-presidents-make-america-healthy-again-commission>

⁵¹ Secretary Kennedy Delivers Welcoming Remarks to HHS Staff, 2/18/25, at 16m45s

https://youtu.be/o-BCMG198Yc?si=bn0rwMlr3_1IsZwF&t=1005

⁵² Effects of radiofrequency electromagnetic field exposure on cancer in laboratory animal studies, a systematic review, April 2025 (available online),

<https://www.sciencedirect.com/science/article/pii/S0160412025002338>.

radiation⁵³ - and those estimates are based on 2008 data, when ambient levels were far lower. The percentage of the population affected is likely far higher, as ambient levels of exposure are also far higher, triggering more symptoms in more people. Exposure gives rise to a constellation of symptoms, some of which include: headaches, nausea, vomiting, tinnitus, hearing loss, heart arrhythmia, tachycardia, neurological disorders; oxidative stress; immune dysfunction; ADHD, and damage to the blood-brain barrier.⁵⁴

Industry knows of the biological effects of RF radiation. A study in 2000 commissioned by one of the major telecom carriers [found](#) links to cancer, leukemia, neurological disorders and cognitive impairment. A telecom company in Switzerland [filed for a patent](#) to reduce wireless radiation stating the reason being the high risk of DNA damage and cancer from wireless radiation.

In addition, recent case studies show that exposure to 5G is linked to injury.⁵⁵

Insurance companies have identified 5G as [high risk](#) because of the high potential of claims of personal injury. The insurance industry does not insure for these risks. Swiss Re calls 5G an [“off the leash”](#) insurance risk (see p.10-11). Telecoms [warn shareholders](#) of potential liability from health effect claims. Companies should compete on safety; some already recognize this. E.g., [Swisscom patent](#) to reduce wireless radiation because of the risk of cancer and neurological disorders, Int’l Pub’n No. WO 2004/075583 A1 2 Sept 2004 PCT, <https://www.avaate.org/spip.php?article2061> and by [cell phone manufacturers](#).

In 1996 the FCC set its emission limits. The FCC has refused to update those limits, but the D.C. Circuit Court of Appeals [ruled against the FCC in 2021](#) and remanded its limits for failure to review 11,000 pages of peer-reviewed scientific studies submitted into the FCC docket showing harm below the FCC limits. Those limits **don’t protect the public**. They serve as a **safe harbor for industry to shield them** from liability for personal injury, whether severe or fatal.

There has been no pre-market testing of 5G for public health or safety, as confirmed by [U.S. Senator Blumenthal](#) (CT) during a Feb. 2019 hearing of wireless telecom executives when he said “We’re kind of flying blind here as far as health and safety is concerned.” There have been [letters](#) from other members of Congress to the FCC regarding inquiries on safety with

⁵³ The Prevalence of People with Restricted Access to Work in Manmade Electromagnetic Environments,
<https://mdsafetech.files.wordpress.com/2019/10/2018-prevalence-of-electromagnetic-sensitivity.pdf>.

⁵⁴ <https://bioinitiative.org/conclusions/>.

⁵⁵ <https://www.stralskyddsstiftelsen.se/third-study-on-5g-and-development-of-the-microwave-syndrome/>.

unsatisfactory responses from the FCC. Ultimately, the DC Circuit Court of Appeals disagreed with the FCC as cited in its 2021 ruling above.

Since 2021, the FCC has ignored the US Court of Appeals DC Circuit order, issued in the successful lawsuit *Environmental Health Trust et al. v. FCC*, to provide a “reasoned explanation” for why the FCC decided not to update its human exposure limits for wireless radiation.⁵⁶ The FCC has not considered the latest science since 1996, as it is otherwise obligated to do under the law. Making more spectrum available while failing to update its exposure limits puts all Americans at risk, and is harming millions of Americans.^{57,58}

Current wireless exposure standards are based largely on 11 monkeys and 12 rats, which were exposed for less than one hour, over 40 years ago, with no control group.⁵⁹ GAO first recommended that the FCC revisit these limits back in 2012 and the FCC has not yet done so.⁶⁰

Complying with laws passed by Congress and a court order is not optional for the FCC – this is an administrative agency acting with impunity, while 100% of its budget is paid for by the industry it is supposed to be regulating.⁶¹

(5) The human environment of those people with Electromagnetic Radiation Syndrome (EMR-Syndrome or EMR-S) as well as the general public who are being involuntarily exposed to RF radiation from the wireless facilities that are the subject of the petition

The U.S. Access Board (which advises the Justice Department and other state and federal agencies under the Americans with Disabilities Act) has recognized disabilities caused by

⁵⁶ *Environmental Health Trust, et al. v. FCC* (DC Circuit, 2021)

<https://media.cadc.uscourts.gov/opinions/docs/2021/08/20-1025-1910111.pdf>

⁵⁷ National Call for Safe Technology, Congressional Briefing, 5/19/24

<https://thenationalcall.org/wp-content/uploads/2024/05/Congressional-Briefing-5-19-24-FINAL.pdf>

⁵⁸ See “Comments of Advocates for the EMS Disabled,” In the Matter of Advance Notice of Proposed Rulemaking-Public Comment on Changes to Requiring Accessibility and Prohibiting Discrimination on the Basis of Disability in HUD -Assisted Programs, Docket FR 6257-A-01. 7/24/23

<https://thenationalcall.org/wp-content/uploads/2023/09/HUD-Submission-7-24-23-Final.pdf>

⁵⁹ International Commission on the Biological Effects of Electromagnetic Fields (ICBE-EMF). Scientific evidence invalidates health assumptions underlying the FCC and ICNIRP exposure limit determinations for radiofrequency radiation: implications for 5G. *Environ Health* 21, 92 (2022). <https://doi.org/10.1186/s12940-022-00900-9>

⁶⁰ Exposure and Testing Requirements for Mobile Phones Should Be Reassessed, GAO-12-771, Jul 24, 2012

<https://www.gao.gov/products/gao-12-771>

⁶¹ FCC Budget in Brief, FY 2025. <https://docs.fcc.gov/public/attachments/DOC-401129A1.pdf>

electromagnetic radiation.⁶² There are other sources showing the proliferation of EMF sensitivities and disabilities.⁶³

A 2019 Bevington study⁶⁴ analyzed the prevalence of EMS disabilities within the population. Based on a population of 332.4 million people in the U.S., the numbers are shockingly high:

Percentages	Number of U.S. EMF Sensitive/Disabled
Can't work – 0.65%	2.16 million
Severe symptom – 1.5%	4.99 million
Moderate symptoms – 5%	16.6 million
Mild symptoms – 30%	99.7 million

Access to work is critical. Those afflicted with EMR-Syndrome are most affected when they cannot work safely in environments containing RF radiation inside a building, such as Wi-Fi, or RF radiation coming from outside a building from nearby base station antennas.⁶⁵ Given the estimated number of people with EMR-Syndrome in the U.S., it has the potential of adversely affecting America's workforce, a negative externality of RF radiation.

(a) The Costs to Human Health from Irresponsible Deployment of Wireless Telecommunications Infrastructure Outweigh the Benefits

The FCC rules have facilitated the irresponsible deployment of wireless telecommunications infrastructure. Evidence of biological harm is clear and convincing, for human health (cancer

⁶² U.S. Access Board – Advancing Full Access & Inclusion for All - “Indoor Environmental Quality Project,” <https://www.access-board.gov/research/building/indoor-environmental-quality/>.

⁶³ Electrohypersensitivity (EHS) Is An Environmentally-Induced Disorder That Requires Immediate Attention, Dr. Magda Havas, J. Sci Discov (2019), <http://www.e-discoverypublication.com/wp-content/uploads/2019/03/JSD18020-final.pdf>; see also, Presentation by Karl Maret, M.D., M.Eng., Presentation, 1-17-20, <https://www.youtube.com/watch?v=XilSy3mcjcY>; “The Bioinitiative Report,” <https://bioinitiative.org/>.

⁶⁴ The Prevalence of People with Restricted Access to Work in Manmade Electromagnetic Environments, <https://mdsafetech.files.wordpress.com/2019/10/2018-prevalence-of-electromagnetic-sensitivity.pdf>.

⁶⁵ The Prevalence of People with Restricted Access to Work in Manmade Electromagnetic Environments, <https://mdsafetech.files.wordpress.com/2019/10/2018-prevalence-of-electromagnetic-sensitivity.pdf>.

and noncancer), and especially children.⁶⁶ The FCC's standards for wireless radiation were established back in 1996, and have not been reviewed, updated or verified despite significant changes in the wireless technology in use today. The FCC's standards relate solely to wireless radiation's thermal impacts on a body (e.g. how the body reacts to being heated), and do not consider other known adverse biological impacts of non-thermal levels of RF radiation (such as damage to DNA or other changes to cells). The FCC's limits were established long before the existence of 2G, 3G, 4G, or 5G technology.

Radio frequency (RF) radiation produces biological effects and while evidence of its hazards are clear and convincing, the hazards are not generally publicized. The hazards are unnecessary to reap the benefits of wireless technology.

The FCC has allowed federal preemption over local government despite actual knowledge of biological effects. Restoring liability for providers and manufacturers would allow the free market to operate and have them compete on safety. As these issues converge with the MAHA Executive Order to study potential contributing causes of chronic disease in children including, from "electromagnetic radiation," the following are only some examples of negative externalities, the results of FCC preemption giving rise to the irresponsible placement of cell towers.

(b) Chronic Disease and Clusters Near Cell Towers

Illnesses near cell towers, e.g., nausea, rashes, stroke, atrial fibrillation and a variety of cancers, have been documented near Duluth, MN (51 strokes), Pittsfield, MA (17 residents fell ill and many evacuated, one resident who remained died), Rippon, CA (4 children and 4 teachers developed cancer; one child died) and Eagle, ID (atrial fibrillations from 5G cell towers).

- **Near Duluth, MN**, a woman suffered 51 strokes after a nearby cell tower was "upgraded," in addition to experiencing nausea, blind spots in her vision, orientation and balance difficulties.⁶⁷
- **Clusters of sickness near cell towers (not exhaustive).**

⁶⁶ See testimony submitted by Environmental Health Trust to Senate Commerce Committee, 3/27/24, regarding spectrum policy and harms from radiofrequency radiation
<https://ehtrust.org/wp-content/uploads/EHT-Testimony-to-Senate-Commerce-Committee-on-S3909-03272024.pdf>

National Toxicology Program 2018: clear evidence of cancer (highest level of evidence)
<https://ntp.niehs.nih.gov/whatwestudy/topics/cellphones#studies>

Woman living near cell tower diagnosed with 51 strokes,
https://www.momsacrossamerica.com/woman_living_near_cell_tower

⁶⁷ <https://childrenshealthdefense.org/defender/marcia-haller-cell-tower-rf-radiation-sickness/>.

- **The Board of Health of Pittsfield, MA** issued an emergency cease and desist order in April 2022 to turn off a 4G cell tower that injured 17 residents, most of whom evacuated their homes.⁶⁸ One of those who remained has since died of cancer. The order cited residents having reported “headaches, ringing in the ears, dizziness, heart palpitations, nausea, and skin rashes,” and, e.g., a child who had “to sleep with a bucket next to her bed in case she needs to throw up.”⁶⁹ Because the telecom carrier threatened to sue, the Board of Health was compelled to rescind the order. The residents filed suit against the city but lost on federal preemption, i.e., no legal recourse for health claims.
- **In Rippon, CA** when a cell tower was placed near an elementary school, 4 children (ages 6-11) got cancer (brain, liver, kidney) and 4 teachers got breast cancer.⁷⁰ One of the children who contracted brain cancer (glioblastoma) when he was 10 years died in Aug 2024.⁷¹ Since the tower was removed, it was reported that there were no more instances of cancer at the school.⁷²
- **In an Idaho town** after 5G cell towers were installed, it was reported that a cluster of residents developed atrial fibrillation (a-fib). One of those residents who had undergone surgery for a-fib is a plaintiff in a lawsuit against the telecom carrier which refuses to provide accommodation under the Americans with Disabilities Act.⁷³

The FCC should put a thumb on the scale of public interest even though industry sound bites may purport to represent the public interest when they are only serving, understandably, their shareholders.

(6) Potential Constitutional Violations of “Streamlining” Permitting Process

- a. Potentially violates 5th Amendment right of due process by viewing public participation as a regulatory barrier that may include removal of any public notice, hearing, or consent. More broadly, the entire FCC’s regulatory framework has prevented individuals who have suffered injury to their person or

⁶⁸ <https://ehtrust.org/cease-and-desist-order-against-verizon-cell-tower-by-board-of-health-pittsfield-ma/>, see below the fold for link to the Order, p.12.

⁶⁹ <https://ehtrust.org/family-injured-by-cell-tower-radiation-in-pittsfield-massachusetts/>.

⁷⁰ See beginning of video at https://www.youtube.com/watch?v=-9TMTexPb_0&t=128s.

⁷¹ See the lists of treatments and surgeries that this child endured before he died, <https://www.gofundme.com/f/support-the-ferrulli-family-in-memory-of-mason>.

⁷² See beginning of video at https://www.youtube.com/watch?v=-9TMTexPb_0&t=128s.

⁷³ <https://childrenshealthdefense.org/press-release/chd-files-in-series-of-lawsuits-seeking-disability-accommodation-for-people-injured-by-rf-radiation-from-cell-towers/> and <https://childrenshealthdefense.org/defender/henry-hank-allen-chd-verizon-lawsuit-radiofrequency-radiation-cell-towers/>.

property from seeking redress in an Article III court, which raises serious constitutional questions.

- b.** Potentially violates Commerce Clause (Art. 1, Sec. 8, Cl. 3) (a) by interfering with, and creating shot clock and deemed approved deadlines that may conflict with, local governments' codes over health, life and safety and open government laws that require adequate notice, time and deliberation for decisions to be rendered, and (b) by not providing the public the choice of abstaining, but forcing the public to partake in the commerce activity, and suffer the consequences, whether or not they subscribe to that activity, e.g., having a wireless facility in one's front yard even if not subscribing to the wireless service, yet forcibly exposed to an ugly, radiating facility, that is energy consumptive, environmentally damaging and property devaluing.
- c.** Potentially violates the 5th Amendment right to just compensation by stripping private rights of ownership without just compensation by authorizing radiation to be emitted from a wireless facility that invades a property owner's property-based right to exclude.

Conclusion

The CTIA petition is unavailing for the reasons set forth in this submission. The FCC should expand its activities under NEPA, not curtail them.

On behalf of Americans Injured and Disabled from Electromagnetic Radiation and the Filing Parties

Respectfully Submitted,



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APPENDIX A

Biological Hazards of Wireless Radiation – Executive Summary

April 25, 2025

The FCC's standards for wireless radiation were established back in 1996, and have not been reviewed, updated or verified despite significant changes in the wireless technology in use today. The FCC's standards relate solely to wireless radiation's thermal impacts on a body (e.g. how the body reacts to being heated), and do not consider other known adverse biological impacts of non-thermal levels of RF radiation (such as damage to DNA or other changes to cells). The FCC's limits were established long before the existence of 2G, 3G, 4G, or 5G technology.

Congress eliminated the EPA's funding for electromagnetic research in 1996, knee capping the EPA from studying biological impacts of RF radiation for nearly 30 years. *At the very least, the FCC's standards should be reconsidered (FCC is under federal court order to do so, but has not) given current technology.*

Wireless radiation, also referred to as radio frequency (RF) radiation, produces biological effects and evidence of its hazards are clear and convincing, yet the hazards are not generally publicized, and the hazards are unnecessary to reap the benefits of wireless technology.

- **Industry Funded Research** – The wireless industry has funded studies that show adverse biological impacts. A 1990s \$28.5 million study found that RF radiation produces biological effects that are potentially hazardous to humans in ways that have nothing to do with heated tissue. A 2000 study for a major telecom carrier found RF radiation has links to cancer, neurological disorders and cognitive impairment. Insurance companies will not insure for personal injury from RF radiation, reflecting their concerns about the possible magnitude of their liability, e.g., that 5G is a high, “off the leash” risk.
- **Reports from Federal Agencies** – A 2018 \$30 million US National Toxicology Program (NTP) study found “clear evidence of cancer” in lab rats from wireless radiation. In 2019, the FCC admitted that RF radiation can have non-thermal impacts on humans, but it has conducted no studies to determine what those impacts might be or what changes should be made to its RF radiation emission limits. In 2021, the DC Circuit Court of Appeals ruled in *Environmental Health Trust, et al v. FCC* that the FCC's lack of action was arbitrary and capricious for failing to review its emission standards in light of new science and current technology and that it should consider non-cancer health impacts of wireless radiation. So far, the FCC has failed to comply with the Court order. As early as 1971, the US Naval Medical Research Academy concluded

from 2300 studies that RF radiation, including millimeter (e.g. 5G), are linked to cardiac, neurological and other disorders.

- **Independent Studies** – Several major independent studies have concluded biological effects from RF radiation, including by the Int’l Agency on Research on Cancer (IARC) of the World Health Organization in 2011 (classifying wireless radiation as a Class 2B carcinogen), the Ramazzini Institute in 2018 (clear evidence of cancer in lab rats, corroborating the NTP’s results) and the New Hampshire Commission in 2020 (all forms of wireless radiation are harmful). The American Academy of Pediatrics warns that children are disproportionately affected by cell phone radiation. Studies concluded increased risk for ADHD, delayed motor skills, diabetes and demyelination of fetuses’ brain neurons.
- **Chronic Diseases and Clusters near Cell Towers** – Illnesses near cell towers, e.g., nausea, rashes, stroke, atrial fibrillation and a variety of cancers, have been documented near Duluth, MN (51 strokes), Pittsfield, MA (17 residents fell ill and many evacuated, one resident who remained died), Rippon, CA (4 children and 4 teachers developed cancer; one child died) and Eagle, ID (atrial fibrillations from 5G cell towers).

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BIOLOGICAL HAZARDS OF WIRELESS RADIATION -- SOME HIGHLIGHTS

April 25, 2025

“The evidence presented to the Board includes well over one thousand peer-reviewed scientific and medical studies which consistently find that pulsed and modulated RFR has bio-effects and can lead to short- and long-term adverse health effects in humans, either directly or by aggravating other existing medical conditions. Credible, independent peer-reviewed scientific and medical studies show profoundly deleterious effects on human health, including but not limited to: neurological and dermatological effects; increased risk of cancer and brain tumors; DNA damage; oxidative stress; immune dysfunction; cognitive processing effects; altered brain development, sleep and memory disturbances, ADHD, abnormal behavior, sperm dysfunction, and damage to the blood-brain barrier.”⁷⁴

~ Board of Health, Pittsfield, MA, Emergency Cease & Desist Order to remove cell tower that was sickening 17 residents simultaneously.

⁷⁴ <https://ehtrust.org/cease-and-desist-order-against-verizon-cell-tower-by-board-of-health-pittsfield-ma/>, see below the fold for link to the Order at 3, 2nd “Whereas” clause, paragraph #1.

What the Industry Knows About the Biological Hazards of RF Radiation:

1. **Industry Funded Research Finds Biological Effects.** A 1990s research program funded by the wireless industry at \$28.5 million under the independent non-profit, Wireless Technology Research, LLC (WTR), found that wireless radiation (i.e., non-thermal radiation) is **biologically active producing biological effects and potentially hazardous to human health**.⁷⁵ That means the radiation does not need to heat human tissue. (Note that the FCC limits only account for thermal, not non-thermal, adverse effects.)
 - a) The research was peer-reviewed with scientific oversight by both an independent Peer Review Board at the Harvard School of Public Health and a U.S. Government Interagency Working Group, chaired by the FDA, and including EPA, OSHA, NIOSH, CDC, FCC, and NIH.⁷⁶
 - b) Abruptly after these findings, the EPA was defunded from doing any further research on the biological effects of wireless radiation.⁷⁷
2. **Industry Commissioned Study Finds Biological Effects.** A study in 2000 commissioned by a major telecom carrier found links to cancer, leukemia, neurological disorders and cognitive impairment, with special caution for children and an acknowledgement of those already disabled from the radiation.⁷⁸
3. **Industry Patents Point to Health Risks.** Telecom and cell phone manufacturers have filed patents to reduce the level of wireless exposure tied directly to health risks such as neurological disorders and cancer.⁷⁹

⁷⁵ Wireless Phones and Health II: State of the Science 2002 Edition, edited by George L. Carlo; Wireless Phones and Health: Scientific Progress, edited by George L. Carlo.

⁷⁶ Ibid.

⁷⁷ Overpowered, What Science Tells Us About the Dangers of Cell Phones and Other WiFi-Age Devices, Martin Blank, PhD, 2014 at 110-112.

⁷⁸ T-Mobil Deutsche Telekom commissioned study by the Ecolog-Institute, April 2000, "Mobile Telecommunications and Health Review of the Current Scientific Research in View of Precautionary Health Protection," <https://ehtrust.org/wp-content/uploads/ecolog2000.pdf>.

⁷⁹ Swisscom patent, 2004 at [https://www.dropbox.com/scl/fi/nwdfklq7r7j2wwsipv7ws/SwissCom-Patent-application-2003-2004-WO2004075583A1-1-1-1.pdf?rlkey=liuy6175hamj24lbuszpe7vux&st=5p2oy0ji&dl=0](https://www.dropbox.com/scl/fi/nwdfklq7r7j2wwsipv7ws/SwissCom-Patent-application-2003-2004-WO2004075583A1-1-1.pdf?rlkey=liuy6175hamj24lbuszpe7vux&st=5p2oy0ji&dl=0); "Manufacturers Own Patents to Cut Radiation," RCR Wireless, June 4, 2001 at <https://www.dropbox.com/scl/fi/0rfwys743dgeqpifwu3ua/Manufacturer-own-patents-to-cut-radiation-RCR-Wireless-News.pdf?rlkey=e5hm46nyp9an6ugu4y005ldm3&st=xr7ocreh&dl=0>.

4. **Risk Warnings of Litigation.** Industry annual reports warn their shareholders of litigation risk from potential personal injury claims from RF radiation and potential financial losses.⁸⁰
5. **RF Radiation is a Pollutant.** The telecom industry characterizes RF radiation as a pollutant in their device protection plans and disclaim insurance liability.⁸¹
6. **Insurance Companies Exclude Injury Coverage for RF Radiation.** Insurance companies such as Lloyd's of London will not insure for personal injury from RF radiation because of the high risk of claims, with Swiss Re characterizing "5G" as "high," "off-the-leash" risk.⁸²
7. **No 5G Pre-Market Testing.** Telecom executives during a Feb. 2019 Senate hearing confirmed no industry pre-market testing of 5G for public health or safety. Sen. Blumenthal (CT) criticized the FCC and FDA for inadequate answers on questions of public health, and concluded, "We're kind of flying blind here as far as health and safety is concerned."⁸³
8. **"Why Tech Leaders Don't Let Their Kids Use Tech."**⁸⁴ The article reports that technology executives restrict or forbid their children's use of the very technology that they are providing to the public, including "the makers of smartphones and tablets, of

⁸⁰ AT&T, Inc., 2021 Annual Report, <https://investors.att.com/~media/Files/A/ATT-IR-V2/financial-reports/annual-reports/2021/complete-2021-annual-report.pdf> at 41.

Verizon's 2021 U.S. SEC Form 10-K at 17,
<https://www.verizon.com/about/sites/default/files/2020-Annual-Report-on-Form-10-K.PDF>.

⁸¹ Exclusions of loss from electromagnetic radiation from insurance coverage:

- Verizon, Sec B "Exclusions," Subsection 16 "Pollution," <https://ehtrust.org/wp-content/uploads/device-protection-brochure-nationwide.pdf>;
- AT&T, Sec II "Exclusions," Subsection H. Loss from "Pollutants," Sec IX.T. Definition of "Pollutants," <https://ehtrust.org/wp-content/uploads/ATT-Multi-Device-Protection-Pack-Insurance.pdf>;
- Sprint, Sec II "Exclusions," Subsection H. Loss from "Pollutants," Sec IX.P. Definition of "Pollutants," <https://ehtrust.org/wp-content/uploads/Sprint-Insurance-Terms-and-Conditions-Downloaded-2019.pdf>.

⁸² <https://ehtrust.org/key-issues/electromagnetic-field-insurance-policy-exclusions/>.

⁸³ <https://ehtrust.org/health-effects-of-5g-wireless-technology-confirmed-at-us-senate-hearing-after-senator-blumenthal-questions-industry/>; see also, <https://mdsafetech.org/2019/02/13/no-research-on-5g-safety-senator-blumenthal-question-answered/>.

⁸⁴ "Why Tech Leaders Don't Let Their Kids Use Tech," <https://kidzu.co/health-wellbeing/why-tech-leaders-dont-let-their-kids-use-tech/>.

social media channels and game boxes.” Technology “titans” such as former Apple’s Steve Jobs and Bill and Melinda Gates have admitted to placing restrictions on their children’s use of technology. Chris Anderson, former Wired magazine editor and CEO of 3D Robotics, said that his kids “accuse me and my wife of being fascists and overly concerned about tech, and they say that none of their friends have the same rules. That’s because we have seen the dangers of technology firsthand. I’ve seen it in myself, I don’t want to see that happen to my kids.”⁸⁵

What Federal Agencies Know About the Biological Effects of Wireless Radiation and Have Disregarded:

1. **Food and Drug Administration (FDA).** The U.S. National Toxicology Program’s (NTP) 2018 report concluded **clear evidence of cancer** in lab rats from wireless radiation (similar to 2G and 3G cell phones).⁸⁶ NTP found malignant heart schwannomas and malignant brain gliomas.⁸⁷ NTP is one of the most prestigious toxicology institutions in the world. In 1999, the FDA had nominated the NTP to conduct a \$30 million study of RF radiation “with a high priority,” to conduct animal studies, stating that it was “not scientifically possible to guarantee that non-thermal levels of microwave radiation . . . will not cause long-term adverse health effects.”⁸⁸
 - a) Dr. Linda Birnbaum, former NIH and NTP director, has stated: “Every agent known to cause cancer in humans will also produce it in animals when

⁸⁵ Ibid.

⁸⁶ See letter of Dr. Birnbaum, former NIH and NTP Director, and hyperlinked amicus brief <https://www.dropbox.com/scl/fi/nc7l00p8zrk8tj0l2a1yr/Dr.-Linda-Birnbaum-cell-tower-letter.pdf?rlkey=vq1i363i74umg9ybydrhmn5d&st=q9l49h88&dl=0> ; see also, <https://ehtrust.org/former-niehs-director-dr-linda-birnbaum-interviewed-about-cell-phone-radiation/>.

⁸⁷ <https://ntp.niehs.nih.gov/whatwestudy/topics/cellphones#studies> *Environmental Health Trust, et al v. FCC*, Motion for Leave to File Brief of Amicus Curiae Joseph Sandri in Support of Petitioners Urging Reversal, Aug. 5, 2020, <https://ehtrust.org/wp-content/uploads/20-1025-Amicus-Brief-Joe-Sandri.pdf>.

⁸⁸ Note that the following letter is no longer available at the below URL, although it was originally accessed from there. Letter from the Dept of Health and Human Services to the National Toxicology Program at the National Institute for Environmental Health Studies, May 19, 1999, https://ntp.niehs.nih.gov/sites/default/files/ntp/htdocs/chem_background/exsumpdf/wireless051999_508.pdf.

adequately tested.”⁸⁹ “Overall, the NTP findings demonstrate the potential for RFR to cause cancer in humans.”⁹⁰ [Emphasis added.]

2. Federal Communications Commission (FCC).

- a) The FCC admitted in 2019 that at least some types of RF radiation can cause instantaneous non-thermal adverse effects with RF radiation frequencies ranging between 3 KHz and 10 MHz.⁹¹ The FCC averages exposure levels over 30 minutes,⁹² which completely obscures the effects of the constant peaking and pulsations of RF radiation which causes adverse health effects, and does not account for 24/7 exposure by the population.⁹³

⁸⁹ Dr. Birnbaum’s statement in Attorney Joe Sandri’s Amicus Brief filed 8-5-2020 in connection with *Environmental Health Trust, et al v. FCC*, <https://ehtrust.org/fcc-amicus-briefs/> (below the fold, right column) at 9.

⁹⁰ Ibid, 11.

⁹¹ Proposed Changes in the Commission’s Rule Regarding Human Exposure to Radiofrequency Electromagnetic Fields, 34 FCC Rcd 11687, 11743-11745, ¶¶122- 124 & nn. 322-335 (2019).

⁹² 47 CFR 1.1307(b)(2): “Time-averaging period is a time period not to exceed 30 minutes for fixed RF sources or a time period inherent from device transmission characteristics not to exceed 30 minutes for mobile and portable RF sources,” [https://www.ecfr.gov/current/title-47/chapter-I/subchapter-A/part-1/subpart-I/section-1.1307#p-1.1307\(b\)](https://www.ecfr.gov/current/title-47/chapter-I/subchapter-A/part-1/subpart-I/section-1.1307#p-1.1307(b)).

⁹³ Human-made electromagnetic fields: Ion forced-oscillation and voltage-gated ion channel dysfunction, oxidative stress and DNA damage (Review) (2021) Pangopolous DJ, et al. International Journal of Oncology. August 23, 2021. <https://pubmed.ncbi.nlm.nih.gov/34617575/>.

Computational modeling investigation of pulsed high peak power microwaves and the potential for traumatic brain injury. Sci Adv. 2021 Oct; 7(44). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8555891/>. "These studies reveal that the MAE threshold depends on the energy in a single pulse (not the average power density) for sufficiently short pulses [e.g., 32 µs in (46)], and peak power densities of 102 to 105 mW/cm2 have been known to cause auditory effects in human participants (45)."

“Diplomats' Mystery Illness and Pulsed Radiofrequency/Microwave Radiation,” Dr. Beatrice Golomb. Neural Comput. 2018 Nov; 30(11):2882-2985. <https://pubmed.ncbi.nlm.nih.gov/30183509/>; “Reported facts appear consistent with pulsed RF/MW as the source of injury in affected diplomats.”

“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,” Martin L. Pall, PhD, <https://peaceinspace.blogspot.com/files/5g-emf-hazards--dr-martin-l.-pall--eu-emf2018-6-11us3.pdf>.

b) The FCC received in its docket, when requesting public comment on the adequacy of its 1996 RF radiation emission limits, 11,000 pages of peer-reviewed, scientific studies showing biological effects from RF radiation and a couple hundred personal submissions of injury. When the FCC closed the docket, it declined to update its limits. The FCC was sued and in 2021 the D.C. Circuit Court of Appeals ruled against the FCC and remanded the case back to the FCC because the FCC failed to provide a reasoned explanation for not updating its limits and ignoring the current science.⁹⁴ The FCC has not yet complied.

3. **A U.S. Naval Medical Academy Research** report from 1971 by Dr. Zory Glaser⁹⁵ linked 23 chronic diseases to RF radiation based on over 2300 studies.⁹⁶ A Feb 2025 report correlates Dr. Glaser's findings from 1971 of biological effects of RF radiation and millimeter wave (5G) technology to reported cases of chronic disease.⁹⁷ The 2025 report states that Dr. Glaser reported biological effects and diseases related to the central and autonomic nervous systems, genetic / chromosomal, vascular, blood, metabolic, endocrine and gastrointestinal disorders.⁹⁸ In 1976, Dr. Glaser updated the total bibliography to 3700 reports relating to the biological effects of RF radiation.⁹⁹
4. **Central Intelligence Agency (CIA).** In 2012, the CIA declassified and approved for release a 1977 Russian study on the "Biological Effects of Millimeter Radiowaves" which found that while millimeter waves only penetrate the skin, they trigger a cascade of adverse biological effects within the body.¹⁰⁰

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.

B. W. G. (2012). "Bioinitiative Report 2012: A Rationale for Biologically-based Exposure Standards for Low-Intensity Electromagnetic Radiation."

⁹⁴ <https://media.cadc.uscourts.gov/opinions/docs/2021/08/20-1025-1910111.pdf>

⁹⁵ About Dr. Zory Glaser, <https://zoryglaser.com/>.

⁹⁶ https://www.magdahavas.com/wp-content/uploads/2010/06/Navy_Radiowave_Brief.pdf.

⁹⁷ Report: "Safety of Wireless Radiation, a Scientific View, Feb 2025, Richard Lear and Camilla Rees, https://www.researchgate.net/publication/388763046_Safety_of_Wireless_Technologies_The_Scientific_View at 12-13.

⁹⁸ Ibid at 3.

⁹⁹ <https://ehtrust.org/wp-content/uploads/Naval-MRI-Glaser-Report-1976.pdf>.

¹⁰⁰ <https://mdsafetech.org/wp-content/uploads/2019/02/biological-effects-of-millimeter-wavelengths.-zalyubovskaya-declassif-by-cia-1977-biol-eff-mm-waves.pdf>.

- a) The study coins the term “**radiowave disease**” to describe these effects.¹⁰¹ Adverse effects on the skin included demyelination of sections of nerve fibers (damage or destruction to the insulation around nerve fibers which disrupts normal nerve impulse transmission), fragmented neural conductors, and deformation of sensory receptors, leading to neurological disorders.
- b) The people observed working with millimeter radio wave generators had disturbances in their blood and immuno-biology.¹⁰²
- c) Exposure in lab animals caused many disorders including of the liver, spleen, heart and brain, inhibiting “oxygen consumption rate by the mitochondria of those organs.”¹⁰³
- d) The degree of adverse effects **increased with more exposure**;¹⁰⁴ the lab animals had been exposed for 15 minutes a day for 60 days. When exposure ceases, apparently disorders from low millimeter radio waves are reversible.¹⁰⁵ However, if adverse effects depend on duration of exposure, then Americans exposed continuously 24/7, 365 days a year, would suffer adverse biological effects, but without reprieve and without the ability to recover.

5. Chronology of Federal Agencies expressing since at least the 1990s that the FCC’s wireless limits address only thermal (heating of human tissue), not non-thermal exposure, of RF radiation,¹⁰⁶ despite the fact that non-thermal exposure produces biological effects and disease.

Independent Research on Biological Effects of RF Radiation, Disregarded by Federal Agencies:

1. **The World Health Organization (WHO) published a review in February 2025 linking electromagnetic radiation to high risk of cancer, especially of the heart and brain.**

¹⁰⁷

- a. **The WHO’s International Agency for Research on Cancer (IARC)** classified wireless radiation (2G and 3G) as a **Class 2B possible human carcinogen** in 2011,¹⁰⁸ (similar to lead, diesel fuel and gasoline engine exhaust). This was based on “epidemiological observations in humans which exhibited higher risks

¹⁰¹ Ibid at 57.

¹⁰² Ibid at 60.

¹⁰³ Ibid at 59.

¹⁰⁴ Ibid at 59.

¹⁰⁵ Ibid at 58.

¹⁰⁶ <https://ehtrust.org/timeline-of-development-of-safety-limits-for-wireless-radiation-in-us/>.

¹⁰⁷ Effects of radiofrequency electromagnetic field exposure on cancer in laboratory animal studies, a systematic review, April 2025 (available online), <https://www.sciencedirect.com/science/article/pii/S0160412025002338>.

¹⁰⁸ https://www.iarc.who.int/wp-content/uploads/2018/07/pr208_E.pdf.

for the glioma-type of malignant brain cancer and of benign vestibular schwannoma of the vestibulocochlear nerve among heavy or long-term subscribers of cell or mobile phones.”¹⁰⁹

- b. “[R]esults from animal experiments that the IARC was lacking were later provided by the U.S. National Toxicology Program (NTP) report of two types of cancers in laboratory rats that were exposed, lifelong, to 2G and 3G cell phone RF radiation frequencies below 6 GHz . . . did not exceed 1°C,”¹¹⁰ i.e., did not heat tissue.
- c. Since the WHO 2011 IARC cancer finding by independent scientists, other factions within the WHO have sought to produce industry-aligned pronouncements. For example, its website states a lack of causality of harm from wireless radiation¹¹¹. However, over a decade later, a number of the IARC scientists are saying the opposite – that radiofrequency should be upgraded to a group 1 carcinogen (the highest level of evidence).¹¹² Dr. Miller, a former Senior Epidemiologist and Senior Scientist at the IARC has stated, “[t]here is **sufficient evidence to now classify radiofrequency radiation as a human carcinogen.**”¹¹³

¹⁰⁹ J. C. Lin, "RF Health Safety Limits and Recommendations [Health Matters]," in IEEE Microwave Magazine, vol. 24, no. 6, pp. 18-77, June 2023, doi: 10.1109/MMM.2023.3255659. keywords: {Radiation detectors;Human factors;Safety;Radiation effects;Cellular phones;Radio frequency}.

¹¹⁰ J. C. Lin, "RF Health Safety Limits and Recommendations [Health Matters]," in IEEE Microwave Magazine, vol. 24, no. 6, pp. 18-77, June 2023, doi: 10.1109/MMM.2023.3255659. keywords: {Radiation detectors;Human factors;Safety;Radiation effects;Cellular phones;Radio frequency}.

¹¹¹ <https://www.who.int/news-room/questions-and-answers/item/radiation-5g-mobile-networks-and-health>.

¹¹² Hardell, L., Carlberg, M. "Comments on the US National Toxicology Program technical reports on toxicology and carcinogenesis study in rats exposed to whole-body radiofrequency radiation at 900 MHz and in mice exposed to whole-body radiofrequency radiation at 1,900 MHz". International Journal of Oncology 54, no. 1 (2019): 111-127. <https://doi.org/10.3892/ijo.2018.4606>

¹¹³ Professor Miller, MD, FRCP, FRCP (C), FFPH, FACE, is an eminent physician and expert in preventative medicine, a scientific advisor to various scientific and health authorities, and a former Senior Epidemiologist and Senior Scientist at the World Health Organization's (WHO) International Agency for Research on Cancer (IARC), <https://phiremedical.org/2020-nir-consensus-statement-press-release/>; see Prof. Miller's statement at 00:15:06 at <https://www.youtube.com/watch?v=S16Ql6-w9l8>; see also Proceedings from a Symposium on the Impacts of Wireless Technology on Health, Prof. Miller at 8, https://www.womenscollegehospital.ca/wp-content/uploads/2022/06/Symposium_Document_Final_Jan_12.pdf.

- i. The WHO recently commissioned a study by Karpidis, et al, which concluded in 2024 no hazards from wireless radiation,¹¹⁴ however, the study has been found to be severely flawed with no scientifically valid assessment,¹¹⁵ and its conclusion contradicted scientific evidence and was drawn from data showing hazards.¹¹⁶ Researchers have called for a retraction of the study.¹¹⁷
- ii. Potential conflict of interest: note that the Karpidis study was done by the WHO's EMF Project, not by the IARC, the latter being an advisory group consisting of 29 scientists from 18 countries.¹¹⁸
- iii. Another WHO study in 2024 on RF-induced oxidative stress identified 11,599 studies on oxidative stress within the 800-2450 MHz range, but discarded

¹¹⁴ K. Karipidis, D. Baaken, T. Loney, M. Blettner, C. Brzozek, M. Elwood, C. Narh, N. Orsini, M. Rösli, M.S. Paulo, S. Lagorio, The effect of exposure to radiofrequency fields on cancer risk in the general and working population: A systematic review of human observational studies - Part I: Most researched outcomes

Environ Int., 191 (2024), Article 108983, 10.1016/j.envint.2024.108983.

¹¹⁵ John W. Frank, Joel M. Moskowitz, Ronald L. Melnick, Lennart Hardell, Alasdair Philips, Paul Héroux, Elizabeth Kelley, *The Systematic Review on RF-EMF Exposure and Cancer by Karipidis et al. (2024) has Serious Flaws that Undermine the Validity of the Study's Conclusions*, Environment International, Vol. 195, 2025, 109200, ISSN 0160-4120, <https://doi.org/10.1016/j.envint.2024.109200>.

(<https://www.sciencedirect.com/science/article/pii/S0160412024007876>)

¹¹⁶ "WHO to build neglect of RF-EMF exposure hazards on flawed EHC reviews? Case study demonstrates how 'no hazards' conclusion is drawn from data showing hazards," 7/10/24, <https://www.degruyter.com/document/doi/10.1515/reveh-2024-0089/html>;

"WHO's EMF Project's Systemic Reviews on the Association between RF Exposure and Health Effects Encounter Challenges," James Lin, IEEE Microwave Magazine, Jan 2025, https://www.dropbox.com/scl/fi/xq492i5ha6f2431vyxn3g/World_Health_Organizations_EMF_Projects_Systemic_Reviews_on_the_Association_Between_RF_Exposure_and_Health_Effects_Encounter_Challenges_Health_Matters.pdf?rlkey=o77i19den485rdo2k4ktdzhgi&st=842p0rbv&dl=0.

¹¹⁷ Lennart Hardell, Mona Nilsson. A Critical Analysis of the World Health Organization (WHO) Systematic Review 2024 on Radiofrequency Radiation Exposure and Cancer Risks. Journal of Cancer Science and Clinical Therapeutics. 9 (2025): 09-26., <https://cdn.fortunejournals.com/articles/a-critical-analysis-of-the-world-health-organization-who-systematic-review.pdf>.

¹¹⁸ *Health risks from radiofrequency radiation, including 5G, should be assessed by experts with no conflicts of interest*, Lennart Hardell, Michael Carlberg. Oncol Lett. 2020 Jul 15;20(4):15. doi: 10.3892/ol.2020.11876.

more than 99% of those studies.¹¹⁹ Researchers have called for a retraction of the study.¹²⁰

2. **The Ramazzini Institute** in Italy in 2018 found increased malignant heart schwannomas and malignant brain gliomas in lab animals from cell tower base stations, similar to what the NTP found from 2G/3G.¹²¹

Note: “Since the IARC evaluation in 2011, the evidence on human cancer risks from RF radiation has been strengthened based on human cancer epidemiology reports [IARC Class 2B designation for RF radiation], animal carcinogenicity studies [NTP study finding clear evidence of cancer] and experimental findings on oxidative mechanisms [associated with increased DNA damage]¹²² and genotoxicity [associated with increased DNA damage]¹²³. Therefore, the IARC Category should be upgraded from Group 2B to Group 1, a human carcinogen¹²⁴. ”¹²⁵ [Some internal footnotes omitted]

3. **International Commission on the Biological Effects of Electromagnetic Fields (ICBE-EMF).** “Scientific evidence invalidates health assumptions underlying the FCC

¹¹⁹ Frank, John W., Melnick, Ronald L. and Moskowitz, Joel M.. "A critical appraisal of the WHO 2024 systematic review of the effects of RF-EMF exposure on tinnitus, migraine/headache, and non-specific symptoms" Reviews on Environmental Health, 2024. <https://doi.org/10.1515/reveh-2024-0069>; “Another WHO RF Review Challenged, More than 99% of Studies on Oxidative Stress Discarded,” Microwave News, 8/21/24, <https://www.microwavenews.com/short-takes-archive/another-who-rf-systematic-review-challenged>.

¹²⁰ Ibid.

¹²¹ <https://pubmed.ncbi.nlm.nih.gov/29530389/>; see also J. C. Lin, "RF Health Safety Limits and Recommendations [Health Matters]," in IEEE Microwave Magazine, vol. 24, no. 6, pp. 18-77, June 2023, doi: 10.1109/MMM.2023.3255659. keywords: {Radiation detectors;Human factors;Safety;Radiation effects;Cellular phones;Radio frequency}.

¹²² Yakymenko I, Tsybulin O, Sidorik E, Henshel D, Kyrylenko O, Kyrylenko S. Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation. Electromagn Biol Med. 2016;35:186–202. doi: 10.3109/15368378.2015.1043557.

¹²³ Smith-Roe SL, Wyde ME, Stout MD, Winters JW, Hobbs CA, Shepard KG, Green AS, Kissling GE, Shockley KR, Tice RR, et al. Evaluation of the genotoxicity of cell phone radiofrequency radiation in male and female rats and mice following subchronic exposure. Environ Mol Mutagen. 2020;61:276–290. doi: 10.1002/em.22343.

¹²⁴ Carlberg M, Hardell L. Evaluation of mobile phone and cordless phone use and glioma risk using the Bradford Hill viewpoints from 1965 on association or causation. BioMed Res Int. 2017;2017:9218486. doi: 10.1155/2017/9218486.

¹²⁵ Health risks from radiofrequency radiation, including 5G, should be assessed by experts with no conflicts of interest, LHardell, MCarlberg, Oncol Lett. 2020 Jul 15;20(4):15. doi: 10.3892/ol.2020.11876.

and ICNIRP exposure limit determinations for radiofrequency radiation: implications for 5G.”¹²⁶

- a. The FCC wireless radiation limits for human exposure are based **largely** on 1980s experiments “**involving 40-60 minute exposures in 5 monkeys and 8 rats**, and then applying arbitrary safety factors to an apparent threshold specific absorption rate (SAR) of 4 W/kg . . . Adverse effects observed at exposures below the assumed threshold SAR include non-thermal induction of reactive oxygen species, DNA damage, cardiomyopathy, carcinogenicity, sperm damage, and neurological effects . . . ”¹²⁷
4. **New Hampshire Commission** studied the biological effects of wireless radiation and issued a report Nov. 2020¹²⁸ with former commissioner Dr. Kent Chamberlain explaining a “key finding being that exposure to wireless communication radiation is harmful to the health of humans and the environment. Those findings apply to all forms of wireless radiation, which include all generations of cellphone radiation.”
5. **Thousands of scientific and medical studies** show neurological disorders; increased risk of cancer and brain tumors; DNA damage; oxidative stress; immune dysfunction; cognitive processing effects; altered brain development, sleep and memory disturbances, ADHD, abnormal behavior, sperm dysfunction, and damage to the blood-brain barrier.¹²⁹
6. **Eight case studies** since Jan 2023 in Sweden show adverse health impacts from exposure to 5G towers. Previously healthy individuals developed typical “microwave syndrome” symptoms shortly after the towers were installed: headaches, abnormal fatigue, heart arrhythmia, burning skin, trouble concentrating.¹³⁰ The significance of

¹²⁶ EnvironHealth 21, 92 (2022). <https://doi.org/10.1186/s12940-022-00900-9>.

¹²⁷ Ibid.

¹²⁸

<http://www.gencourt.state.nh.us/statstudcomm/committees/1474/reports/5G%20final%20report.pdf>.

¹²⁹ A Rationale for Biologically-based Exposure Standards for Low-Intensity Electromagnetic Radiation, 2022, <https://bioinitiative.org/conclusions/>; see also, Adverse health effects of 5G mobile networking technology under real-life conditions, May 1, 2020, <https://pubmed.ncbi.nlm.nih.gov/31991167/>; Wireless Radiation (RFR) – Is U.S. Government Ignoring Its Own Evidence for Risk? March, 28, 2019, <https://electromagnetichealth.org/electromagnetic-health-blog/u-s-gov-ignoring-own-evidence/>; Oxidative Mechanisms of Biological Activity of Low-Intensity Radiofrequency Radiation, Electromagnetic Biology and Medicine, 35(2), 186-202, Yakymenko, I., Tsybulin, O., Sidorik, E., Henshel, D., Kyrylenko, O., & Kyrylenko, S. (2016), <https://pubmed.ncbi.nlm.nih.gov/26151230/>.

¹³⁰ <https://mdsafetech.org/2023/11/20/5g-health-effects-5-case-reports-of-health-symptoms-after-5g-cell-towers-placed-in-sweden/>; e.g., Jan 2023 study of 63 year old man and 62 year old woman where 5G antennas were installed on the rooftop of their home, https://www.gavinpublishers.com/assets/articles_pdf/Case-Report-The-Microwave-Syndrome-

these reports is that non-ionizing radiation¹³¹ from 5G — well below levels allowed by authorities — can cause health problems in individuals who had no prior history of electromagnetic sensitivity.¹³² Dr. Lennart Hardell, lead author of the reports and world-renowned scientist on cancer risks from radiation, affirms these reports as “groundbreaking” because they serve as the “first warning of a health hazard.”¹³³

7. One-third of Americans suffer from symptoms from RF radiation, based on a 2019 Bevington study which analyzed the prevalence of symptoms from RF radiation within any given population.¹³⁴ Based on a population of 332.4 million people in the U.S.,¹³⁵ 120 million have symptoms, 2% of which (7 million) have severe symptoms or can’t work.

8. Children absorb more RF radiation and are at greater risk than adults.¹³⁶

a. **From cell phones:**¹³⁷

[after--Installation-of-5G-Emphasizes-the-Need-for--Protection-from-Radiofrequency-Radiation.pdf](#) and <https://childrenshealthdefense.org/defender/5g-radiation-microwave-syndrome-symptoms/>; Feb 2023 study of two previously healthy men where 5G antennas were installed on the rooftop of their business, <https://www.anncaserep.com/open-access/development-of-the-microwave-syndrome-in-two-men-shortly-after-9589.pdf>; April 2023 study of 52 year old woman whose apartment was 60 meters from a 5G base station, <https://acmcasereport.com/pdf/ACMCR-v10-1926.pdf?fbclid=IwAR2J-mE3XeBxqaXPQdFxsIf9Q23bMCer9vgUBHnCvJXBrgBv-w7YdRUDwF0>; see also, “The microwave syndrome or electro-hypersensitivity: historical background,” <https://pubmed.ncbi.nlm.nih.gov/26556835/>.

¹³¹ <https://childrenshealthdefense.org/emr/emf-key-terms-descriptions/>.

¹³² <https://childrenshealthdefense.org/emr/emf-wireless-health-impacts/>.

¹³³ <https://www.stralskyddsstiftelsen.se/two-studies-show-that-5g-caused-the-microwave-syndrome-in-healthy-persons/>.

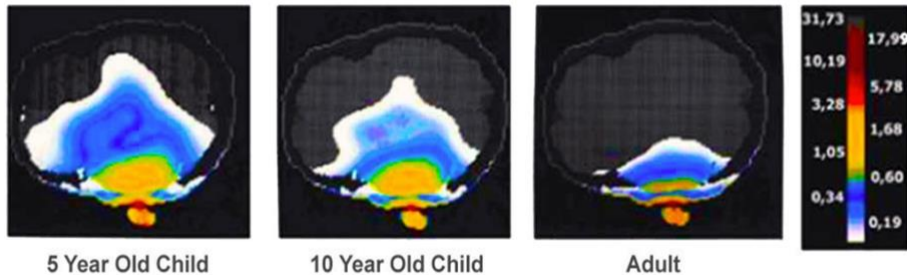
¹³⁴ “The Prevalence of People with Restricted Access to Work in Manmade Electromagnetic Environments,” Journal of Environment and Health Science, <https://mdsafetech.files.wordpress.com/2019/10/2018-prevalence-of-electromagnetic-sensitivity.pdf>.

¹³⁵ <https://www.commerce.gov/news/blog/2022/01/us-population-estimated-332403650-jan-1-2022#:~:text=As%20our%20nation%20prepares%20to,since%20New%20Year's%20Day%202021>.

¹³⁶ “Wireless technologies, non-ionizing electromagnetic fields and children: Identifying and reducing health risks,” Devra Davis PhD, MPH, Linda Birnbaum PhD, Paul Ben-Ishai PhD, Hugh Taylor MD, Meg Sears MEng, PhD, Tom Butler PhD, MSc, Theodora Scarato MSW, bCurr Probl Pediatr Adolesc Health Care, 2023 Feb;53(2):101374 <https://doi.org/10.1016/j.cppeds.2023.101374>; see also, *Children and Wireless Radiation*, <https://ehtrust.org/educate-yourself/children-and-wireless-faqs/>.

¹³⁷ Exposure limits: the underestimation of absorbed cell phone radiation, especially in children, Gandhi, Morgan, Augusto de Salles, Han, Heberman, Davis, October 14, 2011, <https://pubmed.ncbi.nlm.nih.gov/21999884/>.

Children are more vulnerable to RF microwave radiation.



Depth of absorption of cell phone radiation in a 5-year old child, a 10-year old child, and in an adult from GSM cell phone radiation at 900 MHz. Color scale on right shows the SAR in Watts per kilogram. Source: [Exposure limits: the underestimation of absorbed cell phone radiation, especially in children](#)

- b. **American Academy of Pediatrics:** children are disproportionately affected by cell phone radiation due to their lower bone density and amount of fluid in the brain allowing for absorption of greater quantities of RF radiation than in adults.¹³⁸
- c. **Greater risk for fetuses:** risk of “degeneration of the protective myelin sheath that surrounds brain neurons.”¹³⁹
- d. **School-age children:** risk of “[d]igital dementia.”¹⁴⁰
- e. **Childhood leukemia,** increased risk.¹⁴¹

¹³⁸ *Key Scientific Evidence and Public Health Policy Recommendations*, Supplement 2012, at 21, David O. Carpenter, MD, Director, Institute for Health and the Environment University at Albany, Cindy Sage, MA, Sage Associates, https://bioinitiative.org/wp-content/uploads/pdfs/sec24_2012_Key_Scientific_Studies.pdf.<https://bioinitiative.org/>.

¹³⁹ *Why children absorb more microwave radiation than adults: The consequences*, Morgan, Kesar and Davis, *Journal of Microscopy and Ultrastructure*, Vol. 2, Issue 4, December 2014, 197-204, <https://www.sciencedirect.com/science/article/pii/S2213879X14000583>.

¹⁴⁰ *Why children absorb more microwave radiation than adults: The consequences*, Morgan, Kesar and Davis, *Journal of Microscopy and Ultrastructure*, Vol. 2, Issue 4, December 2014, 197-204, <https://www.sciencedirect.com/science/article/pii/S2213879X14000583>.

¹⁴¹ *Key Scientific Evidence and Public Health Policy Recommendations*, 2007, at 19, David O. Carpenter, MD, Director, Institute for Health and the Environment University at Albany, Cindy Sage, MA, Sage Associates, https://bioinitiative.org/wp-content/uploads/pdfs/sec24_2007_Key_Scientific_Studies.pdf.

f. **Potential dangers of cell towers near schools.**¹⁴²

- i. **Elementary school children** exposed to high RF radiation from mobile phone base stations 200 meters from their schools “had a significantly higher risk of type 2 diabetes mellitus” than those exposed to lower RF radiation.¹⁴³
- ii. **Adolescent school children** exposed to high RF radiation from mobile phone base stations within 200 meters from their schools had “delayed fine and gross motor skills, spatial working memory and attention” than those exposed to lower RF radiation.¹⁴⁴
- iii. **A ten-year old child** testified of his cardiac condition being caused by exposure to RF radiation from a router in the library where he was being tutored.¹⁴⁵

9. **Neurobehavioral Symptoms Near Cell Towers.** The following chart shows a worsening of symptoms when closer to a cell tower but a lessening of symptoms when farther away from a cell tower.¹⁴⁶

¹⁴² Dr. Magda Havas: WiFi in Schools is Safe. True or False?

<https://www.youtube.com/watch?v=6v75sKAUFdc>.

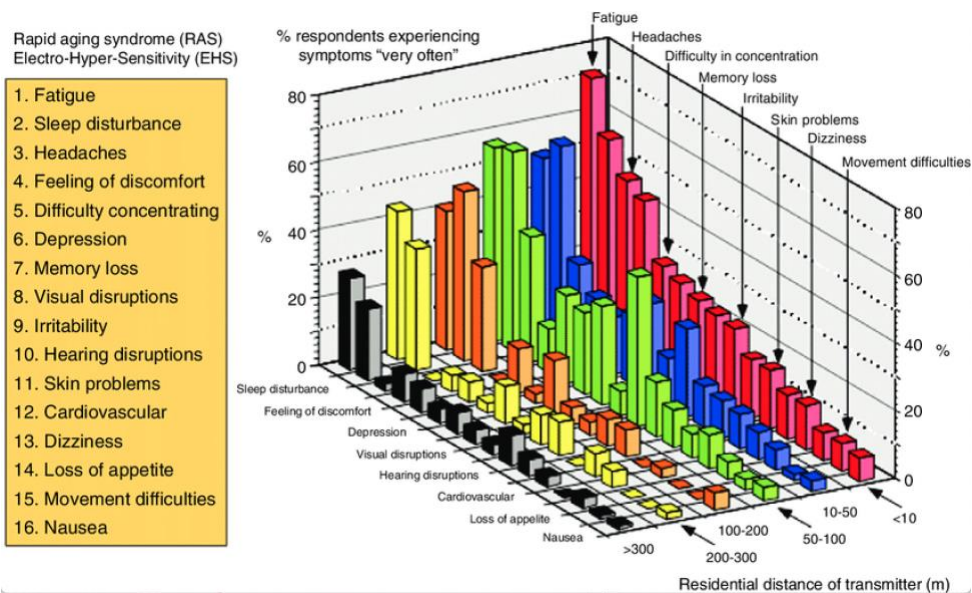
¹⁴³ *Association of Exposure to Radio-Frequency Electromagnetic Field Radiation (RF-EMFR) Generated by Mobile Phone Base Stations (MPBS) with Glycated Hemoglobin (HbA1c) and Risk of Type 2 Diabetes Mellitus*, Sultan Ayoub Meo et al, International Journal of Environmental Research and Public Health, 2015;

https://www.researchgate.net/publication/283726472_Association_of_Exposure_to_Radio-Frequency_Electromagnetic_Field_Radiation_RF-EMFR_Generated_by_Mobile_Phone_Base_Stations_with_Glycated_Hemoglobin_HbA1c_and_Risk_of_Type_2_Diabetes_Mellitus.

¹⁴⁴ Meo, S. A., Almahmoud, M., Alsultan, Q., Alotaibi, N., Alnajashi, I., & Hajjar, W. M. (2018). *Mobile Phone Base Station Tower Settings Adjacent to School Buildings: Impact on Students' Cognitive Health*, American Journal of Men's Health; <https://pubmed.ncbi.nlm.nih.gov/30526242/>.

¹⁴⁵ Child With Heart Problems From Wireless: 5G Health Risks California SB 649 Hearing, https://www.youtube.com/watch?v=OgNLR9fQOX4&list=PLT6DbkXhTGoDakSq1i_7milpwGx4xMFq.

¹⁴⁶ *Cell Tower Health Effects*, Physicians for Safe Technology, <https://mdsafetech.org/cell-tower-health-effects/>.



Symptoms experienced by people near cellular phone base stations; RF radiation affects the blood, heart and autonomic nervous system.¹⁴⁷ Source: Santini, et al (France): Pathol Biol. 2002;50:S369-73; Dr. Magda Havas, PhD.

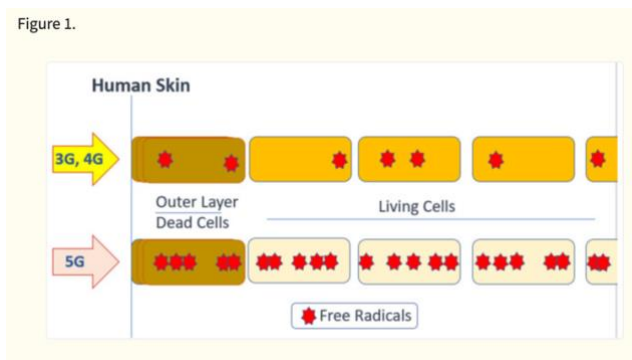
10. RF Radiation Effects. A group of toxicology researchers from multiple universities concluded that overall, high frequency RF radiation even below the FCC limits “can result in: carcinogenicity (brain tumors/glioma, breast cancer, acoustic neuromas, leukemia, parotid gland tumors), genotoxicity (DNA damage, DNA repair inhibition, chromatin structure), mutagenicity, teratogenicity, neurodegenerative diseases (Alzheimer’s Disease, Amyotrophic Lateral Sclerosis), neurobehavioral problems, autism, reproductive problems, pregnancy outcomes, excessive reactive oxygen species/oxidative stress, inflammation, apoptosis, blood-brain barrier disruption, pineal gland/melatonin production, sleep disturbance, headache, irritability, fatigue, concentration difficulties, depression, dizziness, tinnitus, burning and flushed skin, digestive disturbance, tremor, cardiac irregularities, adverse impacts on the neural, circulatory, immune, endocrine, and skeletal systems” and “from this perspective, **RF is a highly pervasive cause of disease.**”¹⁴⁸

11. 5G’s Biological Effects. Contrary to claims that 5G’s higher frequencies (millimeter waves) 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

¹⁴⁷ Dr. Magda Havas, https://www.researchgate.net/figure/Symptoms-experienced-by-people-near-cellular-phone-base-stations-based-on-the-work-of_fig2_258313941.

¹⁴⁸ Ronald N. Kostoff, Paul Heroux, Michael Aschner, Aristides Tsatsakis, “Adverse health effects of 5G mobile networking technology under real-life conditions,” Toxicology Letters, Vol 323, 2020, pp. 35-40, ISSN 0378-4274, <https://doi.org/10.1016/j.toxlet.2020.01.020>.

band and the skin, our largest organ, can intensely absorb the higher 5G frequencies.¹⁴⁹ The millimeter wave technology of 5G will not only directly and adversely affect the skin and eyes [e.g., skin cancer, cataracts], but will, in turn, cascade into systemic signaling effects within the body, “on the nervous system, heart and immune system.”¹⁵⁰ The free radicals accumulating on the skin from 5G (see figure below) cause oxidative stress which can lead to DNA strand breaks, cancer and atherosclerosis.¹⁵¹



12. **Clumping of blood cells.** A Feb 2025 study found that when an otherwise healthy person is in close proximity to a cell phone red blood cells clumped together (rouleaux formation), which leads to blood abnormality, less oxygen transport, and potentially blockages, stroke and heart problems.¹⁵²

¹⁴⁹ N. Betzalel, Y. Feldman and P. B. Ishai, "The Modeling of the Absorbance of Sub-THz Radiation by Human Skin," in IEEE Transactions on Terahertz Science and Technology, vol. 7, no. 5, pp. 521-528, Sept. 2017, doi: 10.1109/TTHZ.2017.2736345, <https://ieeexplore.ieee.org/document/8016593>.

¹⁵⁰ Ronald N. Kostoff, Paul Heroux, Michael Aschner, Aristides Tsatsakis, "Adverse health effects of 5G mobile networking technology under real-life conditions," Toxicology Letters, Vol 323, 2020, pp. 35-40, ISSN 0378-4274, <https://doi.org/10.1016/j.toxlet.2020.01.020>; J J B, A R M, S M J M. A New Look at Three Potential Mechanisms Proposed for the Carcinogenesis of 5G Radiation. J Biomed Phys Eng. 2020 Dec 1;10(6):675-678. doi: 10.31661/jbpe.v0i0.2008-1157. PMID: 33364204; PMCID: PMC7753259, <https://pmc.ncbi.nlm.nih.gov/articles/PMC7753259/#ref7>.

¹⁵¹ J J B, A R M, S M J M. A New Look at Three Potential Mechanisms Proposed for the Carcinogenesis of 5G Radiation. J Biomed Phys Eng. 2020 Dec 1;10(6):675-678. doi: 10.31661/jbpe.v0i0.2008-1157. PMID: 33364204; PMCID: PMC7753259, <https://pmc.ncbi.nlm.nih.gov/articles/PMC7753259/#ref7>; Russell C L. 5 G wireless telecommunications expansion: Public health and environmental implications. EnvironMental Research. 2018;165:484–95. doi: 10.1016/j.envres.2018.01.016.

¹⁵² "Hypothesis: ultrasonography can document dynamic in vivo rouleaux formation due to mobile phone exposure," Robert R. Brown, Barbara Biebrich, Front. Cardiovasc. Med. , 10 February 2025 Sec. Atherosclerosis and Vascular Medicine, Volume 12 - 2025 |

13. **“The 5G Appeal”** to the United Nations to halt the proliferation of 5G, warning of potential biological effects, was signed by 252 scientists and professionals from 43 countries, 40 scientists of which are from 15 U.S. states, including scientists and medical professionals from Columbia and Harvard.¹⁵³ Other scientists have joined in consensus statements.¹⁵⁴
14. **International Association of Fire Fighters** passed a resolution in 2004 that disapproved of cell towers on or near fire stations until safety can be proven.¹⁵⁵
15. **Increases in brain cancer** in the U.S. have been reported, with scientists attributing a high probability on RF radiation from cell phone use.¹⁵⁶
16. **Comprehensive overview** of the adverse biological effects on people and the environment is provided at https://ehtrust.org/wp-content/uploads/EHT-5G-Health-and-Environment-Open-Letter-3_2021-3.pdf.

Chronic Disease and Clusters Near Cell Towers

1. **Near Duluth, MN**, a woman suffered 51 strokes after a nearby cell tower was “upgraded,” in addition to experiencing nausea, blind spots in her vision, orientation and balance difficulties.¹⁵⁷
2. **Clusters of sickness near cell towers (not exhaustive).**
 - a. **The Board of Health of Pittsfield, MA** issued an emergency cease and desist order in April 2022 to turn off a 4G cell tower that injured 17 residents,

<https://doi.org/10.3389/fcvm.2025.1499499>; see also, <https://ehtrust.org/cellphones-and-your-blood-what-you-need-to-know/>.

¹⁵³ <http://www.5gappeal.eu/the-5g-appeal/>; see also, Dr. Martin Blank, PhD, Dept of Physiology and Cellular Biophysics, Columbia University, announcing the appeal early on and warning on wireless radiation, <https://www.youtube.com/watch?v=HgECRrabuZQ>; see also, <https://childrenshealthdefense.org/defender/5g-rollout-harm-regulation-profit/>.

¹⁵⁴ <https://phiremedical.org/wp-content/uploads/2020/11/2020-Non-Ionising-Radiation-Consensus-Statement.pdf>.

¹⁵⁵ <https://www.iaff.org/cell-tower-radiation/>.

¹⁵⁶ See, e.g., [Brain Tumor Rates Are Rising in the US: The Role of Cellphone & Cordless Phone Use](#); [The Incidence of Meningioma, a Non-Malignant Brain Tumor, is Increasing in the U.S.](#); [New review study finds that heavier cell phone use increases tumor risk](#); [Expert report by former U.S. govt. official: High probability RF radiation causes brain tumors](#); [Cell phone and cordless phone use causes brain cancer: New review](#); and <https://ehtrust.org/scientific-documentation-cell-phone-radiation-associated-brain-tumor-rates-rising/>.

¹⁵⁷ <https://childrenshealthdefense.org/defender/marcia-haller-cell-tower-rf-radiation-sickness/>.

most of whom evacuated their homes.¹⁵⁸ One of those who remained has since died of cancer. The order cited residents having reported “headaches, ringing in the ears, dizziness, heart palpitations, nausea, and skin rashes,” and, e.g., a child who had “to sleep with a bucket next to her bed in case she needs to throw up.”¹⁵⁹ Because the telecom carrier threatened to sue, the Board of Health was compelled to rescind the order. The residents filed suit against the city but lost on federal preemption, i.e., no legal recourse for health claims.

- b. **In Rippon, CA** when a cell tower was placed near an elementary school, 4 children (ages 6-11) got cancer (brain, liver, kidney) and 4 teachers got breast cancer.¹⁶⁰ One of the children who contracted brain cancer (glioblastoma) when he was 10 years died in Aug 2024.¹⁶¹ Since the tower was removed, it was reported that there were no more instances of cancer at the school.¹⁶²
- c. **In an Idaho town** after 5G cell towers were installed, it was reported that a cluster of residents developed atrial fibrillation (a-fib). One of those residents who had undergone surgery for a-fib is a plaintiff in a lawsuit against the telecom carrier which refuses to provide accommodation under the Americans with Disabilities Act.¹⁶³

¹⁵⁸ <https://ehtrust.org/cease-and-desist-order-against-verizon-cell-tower-by-board-of-health-pittsfield-ma/>, see below the fold for link to the Order, p.12.

¹⁵⁹ <https://ehtrust.org/family-injured-by-cell-tower-radiation-in-pittsfield-massachusetts/>.

¹⁶⁰ See beginning of video at https://www.youtube.com/watch?v=-9TMTexPb_0&t=128s.

¹⁶¹ See the lists of treatments and surgeries that this child endured before he died, <https://www.gofundme.com/f/support-the-ferrulli-family-in-memory-of-mason>.

¹⁶² See beginning of video at https://www.youtube.com/watch?v=-9TMTexPb_0&t=128s.

¹⁶³ <https://childrenshealthdefense.org/press-release/chd-files-in-series-of-lawsuits-seeking-disability-accommodation-for-people-injured-by-rf-radiation-from-cell-towers/> and <https://childrenshealthdefense.org/defender/henry-hank-allen-chd-verizon-lawsuit-radiofrequency-radiation-cell-towers/>.

APPENDIX B

The parties listed here collectively constitute the “Filing Parties,” have granted permission to submit these Comments on their behalf, and join together to submit these Comments:

The National Call for Safe Technology, Odette Wilkens, Chair & General Counsel; Charles Frohman, M.Ed, HIA, lobbyist, National Health Federation; 5G Free Rhode Island, Sheila Resseger, M.A., Co-Founder, Cranston, RI; Susan Molloy, M.A., Snowflake, AZ; Coloradoans for Safe Technology, Andrea Mercier (Mother of a severely disabled child who is adversely impacted various forms of non-ionizing radiation), Colorado Springs, CO; Coloradans for Safe Technology, Nancy VanDover, DVM, OMD, Dipl Acup, disabled by EMR; Deborah Shisler, with EMR-S, CO; La Plata for Safe Technology, Ingrid Iverson, with EMR-S, CO; Virginians for Safe Technology, Jenny DeMarco, Communications Director, and Mary Bauer, retired RF engineer, Fredericksburg, VA; NY4Whales & NY4Wildlife Taffee Williams, President, Tuckahoe, NY; Safe Tech International, Sara Aminoff, Union City, CA; Safe Tech International, Kate Kheel, Taneytown, MD; Safe Tech International, Patricia Burke, Millis, MA; Safe Tech Westchester, Ruth F. Moss, Westchester, NY; The Soft Lights Foundation, Mark Baker, President, Beaverton, OR; Amy Harlib, Concerned Citizen, New York, NY; Floris R. Freshman, Scottsdale, AZ, with EMR-S; Virginia Farver, Fort Collins, CO; Gabriela Munoz, disabled with EMR-S, Carmel, NY; EMF Safety Network, Sidnee Cox, Co-director, Windsor, CA; Rosemarie Russell, The National Call for Safe Technology, Hurricane, UT; Erin McDowell, RN, Rocky River, OH, SWORT (Southwestern Ohio for Responsible Technology), with EMR-S; Craig McDowell, veteran, Rocky River, OH; and Citizen League Encouraging Awareness of Radiation (CLEAR), Whidbey Island, WA; Loraine Uebele, FACHE, Kansas City, MO; Katherine Katzin, Takoma Park, MD; Susan Jennings, SW Pennsylvania for Safe Technology, Mount Pleasant, PA (son has EMR-S); Stinson 4 EMF Safety, Sandra Cross, Stinson Beach, CA; SafeTech NC, Nicole Stallings, Black Mountain, NC; Sharon Casjens, with EMR-S; Lauren Bond, New York, NY; York Connects, Janet Drew, York, ME; World Healing Education Now Foundation (WHEN Foundation), Deborah Cooney, President, San Diego, CA; David Zack, Rumson, NJ; Warren Woodward, Sedona, AZ.

Abbreviation:

EMR means electromagnetic radiation.

EMR-S means Electromagnetic Radiation Syndrome