Before the
U.S. Department of the Interior
Washington DC 20554

In the Matter of:	)	
National Environmental Policy Act Implementing Regulations – Interim Final Rule (IFR) – 43 CFR Part 46	))))	Docket Number DOI-2025-0004

COMMENTS OF WIRED BROADBAND, INC.

ON BEHALF OF AMERICANS INJURED AND DISABLED

FROM ELECTROMAGNETIC RADIATION

(ELECTROMAGNETIC RADIATION SYNDROME – EMR-S)

August 4, 2025

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FILING PARTIES

Wired Broadband, Inc. and the parties listed below 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; EMF Wellness Tucson, Lisa Smith,

PhD, Tucson, AZ; Safe Tech Tucson, Tucson, AZ; Fred P. Sinclair, Jr., Alfred, NY; New Yorkers 4 Wired Tech, New York, NY; New York City Alliance for Safe Technology, New York, NY; Rhode Island 4 Safe Tech, Sheila Resseger, M.A., Co-Founder, Cranston, RI; Susan Molloy, M.A., Snowflake, AZ; Coloradans 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 radio frequency 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, journalist, 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, published artist and composer, with EMR-S, Scottsdale, AZ; Virginia Farver, Fort Collins, CO; Gabriela Munoz, with EMR-S, Carmel, NY; EMF Safety Network, Sidnee Cox, Co-director, Windsor, CA; Rosemarie Russell, member of The Women's State Legislative Council of Utah, Hurricane, UT; Erin McDowell, Registered Nurse, with EMR-S Rocky River, OH, SWORT (Southwestern Ohio for Responsible Technology); Craig McDowell, veteran, Rocky River, OH; Southern EMF Radiation Solutions, Shari Champagne, with EMR-S, Houme, LA; Southwest Pennsylvania for Safe Technology, Mount Pleasant, PA, Susan Jennings, MPA, BA, Founder (son has EMR-S); Jen Goddard, Board Certified Doctor of Natural Health, Thriving Proof Holistic Health Practice, and 2025 United States of America Mrs. Maine Pageant, Brewer, ME; Loraine Uebele, FACHE, Kansas City, MO; Sean Polacik, Automation Control Systems Technician, OH; Linda M. Cifelli, retired Registered Nurse, Williamsburg, VA; Safer Cell Phone and Wi-Fi Project, Marne Glaser, Chicago, IL; Katherine Katzin, Takoma Park, MD; Jan Kiefer, Scottdale, PA; Fiber First LA, Charlene Hopey, Topanga, CA; Gene Wagenbreth, Topanga, CA; Eva Christina Andersson, E.U., Sweden; Alison McDonough, Canton, MA, with EMR-S; Longmont for Safe Technology, Doe Kelly, Co-Founder, with EMR-S, Longmont, CO; Sharon Behn, Arden, NC; Brenda Shafer, CA with EMR-S; Margaret Holt Baird, Esq, San Diego, CA with EMR-S; Arizonans for Safe Technology; Sustainability Management Consulting, Angela Casler, Chico, CA; Janet Drew, retired Registered Nurse, York, ME; Tammy Lee, with EMR-S, Lincoln, NE; Pennsylvanians for Safe Technology, Donna DeSanto Ott PT DPT MS FMCHC, Founder & President, PA; Sustainable Upton, Laurie Wodin, Co-Administrator, with EMR-S, Upton, MA; and Martine Victor, VT.

EMR means electromagnetic radiation. **EMR-S** means Electromagnetic Radiation Syndrome.

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1) Executive Summary

Wired Broadband, Inc., on behalf of Americans injured or disabled by electromagnetic radiation, and the Filing Parties set forth above, respectfully submit these comments. Wired Broadband, Inc. is a not-for-profit corporation. 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.

The U.S. Department of the Interior (DOI) has issued an Interim Final Rule (IFR) with its stated purpose "to prioritize efficiency and certainty over all other objectives and avoid and minimize delays and ambiguity in the permitting process;"[1] however, this does not require that its obligations under NEPA be minimized. In fact, efficiency and certainty can be maximized without undercutting or minimizing NEPA requirements by incentivizing the communications industry and related project applicants to enhance innovation by competing on safety. The more safety that is provided, the greater efficiency of the permitting process. The less safety that is provided, the less efficiency in the permitting process. It is up to communications industry – in particular the wireless industry – to increase the efficiency of the process.

Efficiency is not achieved by lessening NEPA requirements, but by enforcing them rigorously, the wireless industry will be more incentivized to innovate based on safety to people and the human environment. The rationale that DOI repeatedly uses to eliminate many NEPA requirements from its regulations under the Code of Federal Regulations (CFR) is that NEPA is procedural. Many federal regulations are procedural, but they are not relegated from rules under the (CFR) to mere non-binding guidelines on a website by a stroke of the pen, which is what DOI is proposing and has done by issuing an IFR.

The "good cause" exception for issuing this IFR on short notice of being "impracticable, unnecessary, or contrary to the public interest" (§ 553(b)(B)) have not been met. Other than DOI's invocation of the "good cause" exception, it is unsupported by law. That the 30-day public comment period being provided is considered a courtesy rather than a requirement by DOI conflicts with the requirements under the Administrative Procedures Act (APA) to otherwise provide a 60-day comment period.

The wireless industry needs to compete on safety to the human environment. By ensuring the wireless industry's compliance with NEPA within the spirit and letter of the law, DOI can incentivize innovation in the exploitation of our natural resources by this industry based on safety. America leads only if the communications industry competes on safety, and that is how the economy grows. DOI's motto should be: **Americans first, then industry follows.**

[1] Executive Order 14154.

2) Function of the U.S. Dept of Interior is to Serve the Public Interest

Since DOI's inception in 1849, its function has been to serve the public interest and preserve our cultural heritage. In that vein, DOI manages (a) a vast array of federal lands, national parks, wildlife refuges, forests, endangered species and other conservation efforts. (b) natural resources, minerals, and resource management and (c) leasing federal lands for various purposes, including oil and gas extraction, mining, and renewable energy projects.[2] DOI oversees two-thirds of the estimated 640 million acres of federal land, almost 55 million acres of tribal lands, more than 700 million acres of subsurface minerals, and about 2.5 billion acres of the outer continental shelf.[3] Therefore, DOI cannot take lightly its responsibilities under the National Environmental Policy Act (NEPA). NEPA is of paramount importance to DOI's mission to preserve our cultural heritage and natural resources, should not be demoted to simple guidance, and DOI should rigorously enforce NEPA.

3) NEPA is Required, Not Optional

NEPA's overarching goal is to protect the human environment,[4] "stimulate the health and welfare of man," and regulate the safety of the human environment.[5] There is no statutory leeway for the DOI to diminish its NEPA enforcement. There is a safe way to exploit natural resources and to preserve our cultural heritage, and an unsafe way. NEPA is designed for safety to protect Americans.

When Congress enacted NEPA, it was in recognition of "the profound impact of man's activity" from industrial expansion, resource exploitation and other factors on the environment and "the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man."[6] NEPA requires that the Federal Government "use . . . all practicable means . . . " to coordinate Federal programs so that the Nation may:

> (2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

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[2] https://www.congress.gov/crs-product/R45480#:~:text=The%20U.S.%20Department%20of%20the,operations%2C%20programs%2C%20and%20funding.
[3] Ibid.
[4] 42 USC §4321.
[5] 42 USC §4321
[6] 42 U.S. Code § 4331(a) - Congressional declaration of national environmental policy

> (3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
>
> (4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;
>
> (5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities . . . [7]

In protecting the human environment, NEPA's goal is to prevent the destruction of it. **There is no prosperity for Americans if they are adversely affected by the exploitation of our natural resources or by the neglect of our cultural heritage.** If Americans get sick or are otherwise adversely affected, the economy does not grow and America does not lead.

4) DOI Should Incentivize the Communications Industry to Compete on Innovation and Safety to Make the Permitting Process More Efficient, Not Undercut NEPA

If NEPA is seen as getting in the way of the wireless industry, then it begs the question as to what is industry doing to slow down the process? And why, rather than complying with NEPA's requirements that have existed for over half a century, should NEPA safeguards for the human environment be circumvented by relegating them to non-codified procedures?

The role of industry and project applicants must be considered in prioritizing efficiency and certainty. Nothing has been mentioned of the wireless industry's role in having made the permitting process inefficient. DOI's justification for eliminating NEPA requirements in its regulations is "to prioritize efficiency and certainty over all other objectives and avoid and minimize delays and ambiguity in the permitting process."[8] In fact, efficiency and certainty could be maximized without undercutting or minimizing NEPA requirements, but by incentivizing wireless and other project applicants to enhance innovation by competing on safety -- the more safe, the greater efficiency in the permitting process; the less safe, the less efficiency in the permitting process. It is up to the wireless industry to increase efficiency. Efficiency is not achieved by lessening NEPA requirements, but by enforcing them rigorously, so that industry will be more incentivized to innovate based on safety to people and the human environment.

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[7] 42 U.S. Code § 4331(b) - Congressional declaration of national environmental policy
[8] Executive Order 14154.

5) There are No Exemptions Under NEPA for Major Federal Actions

The DOI should strengthen its NEPA procedures. The Fiscal Responsibility Act of 2023 (FRA) underscores that any major federal action be subject to environmental review. Title III, Permitting Reform, Section 321, "defines a major federal action to be an action that an agency determines is subject to substantial federal control and responsibility."[9] Given the breadth of DOI's jurisdiction, any major federal action must abide by NEPA procedures. That the DOI is required to regulate the lands within its jurisdiction under NEPA is not an option – it is a statutory obligation.

Indeed, DOI's IFR which has deleted many of its NEPA regulations is itself a major federal action under NEPA and should be subject to review and scrutiny.

Moreover, while the FRA "limits the scope of an EIS review to reasonably foreseeable environmental effects of the proposed agency action," it underscores that:

> Under NEPA, agencies must conduct an environmental assessment (EA) to determine if a proposed federal action will have significant environmental impacts. If the EA determines that such impacts will be significant, then the agency must submit an Environmental Impact Statement (EIS). The EIS must include a range of alternatives to the proposed action.[10]

The interim final rule issued by CEQ states:

> NEPA requires Federal agencies to consider the environmental effects of proposed actions as part of agencies' decision-making processes.[11]

Moreover, forty years of judicial decisions construing NEPA cemented benchmarks to be followed by federal agencies, project applicants and the public, e.g., rigorous assessment of the effects of the proposed action, including indirect and cumulative effects, on that environment; careful consideration of reasonable alternatives to the proposed action that may have less impact; and timely disclosure to the public with an opportunity for comment.[12]

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[9] https://www.congress.gov/bill/118th-congress/house-bill/3746.
[10] Ibid.
[11] Ibid. I.A.
[12] See Kleppe v. Sierra Club, 427 U.S. 390, 410, 413 (1976); Calvert Cliffs' Coordinating Comm., Inc. v. U.S. Atomic Energy Comm'n, 449 F.2d 1109, 1114 (D.C. Cir. 1971); Natural Resources Defense Council v. Morton, 458 F.2d 827, 834-36 (D.C. Cir. 1972); Hanly v. Kleindienst, 471 F.2d 823, 830-31 (2d Cir. 1972); Minnesota Public Interest Research Group v. Butz, 498 F.2d 1314, 1322 (8th Cir. 1974); Envtl. Def. Fund, Inc. v. Corps of Eng'rs of U.S.

Moreover, the NEPA amendments in the FRA requires "professional integrity, including scientific integrity, of the discussion and analysis" in environmental reviews, using reliable data and resources and making a "reasoned choice among alternatives." [13] The deployment of wireless facilities on DOI lands, such as those contemplated under the EXPLORE Act (§141-143) passed in 2024[14] should be treated as a major federal action.

6) DOI's Decision Would Compromise Government Transparency and Public Input

DOI's decision to use non-codified, and therefore non-binding, procedures to comply with NEPA requirements would compromise government transparency and public input. The rationale that DOI repeatedly uses to eliminate many NEPA requirements from its regulations under the Code of Federal Regulations (CFR) is that NEPA is procedural. Many federal regulations are procedural, but they are not relegated from rules under the (CFR) to mere non-binding guidelines on a website by a stroke of the pen, which is what DOI is proposing and has done by issuing an IFR.

DOI's goodwill assertion that it will ensure such similar visibility to non-codified procedures as is afforded to codified regulations, does not guarantee this result and is unenforceable. That there may be future clarifying court decisions that would necessitate changes in the regulations with concomitant public notice periods does not justify DOI's converting certain NEPA requirements into non-binding and unenforceable procedures. Although DOI cites expediency for this decision, it is nothing new that federal agency regulations may be revised or added to for different reasons, including court decisions. There appears to be no legal basis for DOI to excuse itself from this process which has occurred across federal agencies for decades.

DOI's procedures interpreting NEPA requirements would not be subject to a formal public comment period as would be required in proposed rulemaking. Congress declared in NEPA in 1970 that "it is the continuing policy" of the federal government to achieve NEPA's goals "in cooperation with State and local governments, and other concerned public and private

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Army, 492 F.2d 1123, 1135 (5th Cir. 1974); City of Davis v. Coleman, 521 F.2d 661, 666-677 (9th Cir. 1975); Natural Resources Defense Council v. Callaway, 524 F.2d 79, 89 (2d Cir. 1975); Swain v. Brinegar, 517 F.2d 766 (7th Cir. 1975); City of Rochester v. U.S. Postal Serv., 541 F.2d 967, 973–74 (2d Cir. 1976); Brooks v. Coleman, 518 F.2d 17, 18 (9th Cir. 1975); Concerned About Trident v. Rumsfeld, 555 F.2d 817, 825 (D.C. Cir 1976); Simmons v. U.S. Army Corps of Engineers, 120 F. 3d 664 (7th Cir. 1997).

[13] Sections 102(2)(D) and (E).

[14] https://www.congress.gov/bill/118th-congress/house-bill/6492

organizations[.]"[15] Congress, in recognizing "that each person should enjoy a healthful environment" also declared "that each person has a responsibility to contribute to the preservation and enhancement of the environment."[16] Therefore, DOI's decision to issue NEPA requirements as procedures not subject to public comment conflicts with Congress' intention and federal law that otherwise ensures and requires public input.

7) The "Good Cause" Exception Vitiates the Rule

The "good cause" exception under the Administrative Procedures Act (APA) for issuing this IFR have not been met. The APA sets forth three limited situations in which agencies may skip notice and comment rulemaking when it is "impracticable, unnecessary or contrary to the public interest" and these must be "narrowly construed and only reluctantly countenanced." [17] None of these exceptions applies to rescind or revise the DOI's NEPA-implementing regulations, meaning that DOI is required to publish a Notice of Proposed Rulemaking for public comment before proceeding to a final rule.

Here, DOI has jumped ahead and already implemented the IFR while also issuing the IFR for public comment. Other than DOI's invocation of the "good cause" exception, it is unsupported by law. Therefore, DOI's application of the "good cause" exception vitiates the rule.

DOI's reliance on the IFR has reduced the comment period from 60 to 30 days which reduces the likelihood of meaningful public engagement. That the 30-day public comment period being provided is considered a courtesy rather than a requirement by DOI conflicts with the

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[15] 42 U.S.C. § 4331(a); *see also id*. § 4332(2)(J), Congressional declaration of national environmental policy; see also court decisions underscoring public review requirement, e.g., Dep't of Transp. v. Pub. Citizen, 541 U.S. 752, 768 (2004) ("The very purpose of public issuance of an environmental impact statement is to provide a springboard for public comment.") (cleaned up); Baltimore Gas & Elec. Co. v. Natural Resources Defense Council, Inc., 462 U.S. 87, 97 (1983) (the "informational role" of an environmental impact statement is to "give the public the assurance that the agency has considered environmental concerns in its decision making process.") (cleaned up); Or. Natural Desert Ass'n v. Bureau of Land Mgmt., 625 F.3d 1092, 1121 n.24 (9th Cir. 2010) (NEPA is a "democratic decision making tool"); Sierra Club v. U.S. Army Corps of Eng'rs, 772 F.2d 1043, 1049 (2nd Cir. 1985) (the detailed statement NEPA requires serves "as an environmental full disclosure law so that the public can weigh a project's benefits against its environmental costs.").

[16] 42 U.S. Code § 4331(c), Congressional declaration of national environmental policy.

[17] 5 U.S.C. Sec. 553(b)(B); see New Jersey Dep't of Env't Prot. v. U.S. Env't Prot. Agency, 626 F.2d 1038, 1045 (D.C. Cir. 1980); see also Alcaraz v. Block, 746 F.2d 593, 612 (9th Cir. 1984) (same; cleaned up).

requirements under the APA to otherwise provide a 60-day comment period.[18] In addition, it conflicts with Congress' declaration of achieving NEPA's goals "in cooperation with . . . concerned public and private organizations . . . "

DOI cannot rely on the exception that allows agencies to forego notice and comment rulemaking for internal, procedural guidance because these NEPA regulations and procedures are not merely procedural rules relating to "internal house-keeping measures."[19] The changes in the NEPA regulations go well beyond house-keeping and redefine the bounds of agency NEPA analysis, the thresholds for applying the statute, and whether and when the public may have an opportunity to comment.

Any reliance on the APA exception for statements of policy and interpretive rules similarly fails to withstand even modest scrutiny. Procedures broadly determining whether and how the public may engage with DOI on decisions affecting the health, welfare, and safety of their communities can hardly be relegated to a simple statement of policy. Deleting sections of the Code of Federal Regulations is clearly a legislative rule, and must be subject to APA procedures for changing the CFR.

8) Does Not, but Should, Consider Those Disabled by RF Radiation

We represent the interests of individuals across the country who have been injured or disabled, as well as those still suffering harm, from radio frequency (RF) radiation, or electromagnetic radiation, from cell towers and other wireless emitting facilities.

The DOI does not consider, but should consider, those injured or disabled by RF radiation, i.e., with Electromagnetic Radiation Syndrome (EMR Syndrome / EMR-S). A growing number of Americans suffer from EMR-Syndrome, essentially experiencing radiation poisoning from exposure to electromagnetic radiation, including RF radiation from cell towers and other wireless facilities. A peer-reviewed study from over 6 years ago even before the current proliferation of cell towers, found that the prevalence of those disabled by EMR-Syndrome was up to 30% in any given population, with up to 1.5% being severe cases.[20] Based on a population of 332.4 million people in the U.S.,[21] 120 million have symptoms and 5 million have severe symptoms or can't work.

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[18] 5 U.S.C. §§ 551 et seq.

[19] *Am. Fed'n of Lab. & Cong. of Indus. Organizations v. Nat'l Lab. Rels. Bd.*, 57 F.4th 1023, 1034 (D.C. Cir. 2023) (discussing the "limited carveout" for procedural rules).

[20] Journal of Environment and Health Science https://doi.org/10.15436/2378-6841.19.2402 The Prevalence of People with Restricted Access to Work in Man-Made Electromagnetic Environments

[21] https://www.commerce.gov/news/blog/2022/01/us-population-estimated-332403650-jan-1-

Further underscoring this issue, President Trump's MAHA Commission Executive Order has made it a national priority to study the potential causes of the **chronic disease epidemic in children**, including from effects of **electromagnetic radiation**.[22]

With levels of ambient radiation increasing dramatically in more densely populated areas, individuals with EMR-S are often forced to flee urban, suburban, and other populated areas to avoid these higher density RF radiation environments. Exponentially increasing levels of ambient RF radiation throughout the country not only effects those with EMR-S, but also the general public who do not want themselves or their children to be exposed to RF radiation, due to its deleterious long-term impacts on human health.

In order to survive, EMR-S refugees are often forced to up-end their lives and flee to sparsely populated, difficult-to-reach areas to find lower RF radiation levels. The federal lands over which the DOI has jurisdiction have become places of refuge for them and may be the last remaining safe spots for millions of Americans. The DOI needs to consider their plight, an injustice suffered by this vulnerable population, and the economic and human rights damage inflicted upon them. EMR-S individuals cannot use a technology that is harming them or be forcibly exposed to radiation without their consent. Forests are also prescribed to military veterans with post-traumatic stress syndrome to recuperate.

Cell towers have had a negative effect within DOI's jurisdiction. In 2014, DOI wrote a letter to the National Telecommunications Information Administration (NTIA) about the negative impact of cell towers on wild nesting birds.

> "Study results have documented nest and site abandonment, plumage deterioration, locomotion problems, reduced survivorship, and death (e.g., Balmori 2005, Balmori and Hallberg 2007, and Everaert and Bauwens 2007). Nesting migratory birds and their offspring have apparently been affected by the radiation from cellular phone towers in the 900 and 1800 MHz frequency ranges- 915 MHz is the standard cellular phone frequency used in the United States.
>
> However, the electromagnetic radiation standards used by the Federal Communications Commission (FCC) continue to be based on thermal

2022#:~:text=As%20our%20nation%20prepares%20to,since%20New%20Year's%20Day%202021.

[22] See §4a https://www.federalregister.gov/documents/2025/02/19/2025-02871/establishing-the-presidents-make-america-healthy-again-commission.

> heating, a criterion now nearly 30 years out of date and inapplicable today." [23]

Robust scientific studies document the adverse biological effects from RF radiation. This is further explained in Environmental Health Sciences' comments, with extensive sources on the consistent adverse biological effects that have been documented for decades, incorporated herein by reference.[24]

There are adverse biological effects of RF radiation on humans, plants, animals, and microbes. Addendum A, incorporated herein by reference, provides a summary of adverse biological effects. DOI's IFR which has deleted many of its NEPA regulations is itself a major federal action under NEPA and should be subject to review and scrutiny as such, including consideration of the impact of RF radiation on humans, plants, animals, and microbes on and off DOI lands as a result of DOI's IFR and NEPA procedures. A recent April 2025 World Health Organization review concludes that:

> [T]here is evidence that **RF EMF exposure increases the incidence of cancer** in experimental animals with the [certainty of evidence] being strongest for malignant heart schwannomas and gliomas" (brain tumors).[25]

9) DOI Must Consider Cumulative Effects

NEPA requires agencies to assess "major Federal actions significantly affecting the quality of the human environment" and consider "reasonably foreseeable environmental effects."[26] In that vein, courts have consistently held that NEPA requires the disclosure of cumulative effects.[27]

Attempts to strip away the requirement for cumulative effects analysis undermines NEPA's statutory requirement and risks serious harm to communities and the environment. Assessing cumulative effects is essential to understanding how large projects—such as highways, pipelines, industrial facilities and wireless facilities — compound pollution burdens, degrade ecosystems and affect Americans' health. Without this analysis, the broader, long-term consequences of agency decisions are obscured, particularly as they relate to environmental

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[23] https://ehtrust.org/wp-content/uploads/Department-of-Interior-Feb-2014-letter-on-Birds-and-RF.pdf.
[24] https://www.fcc.gov/ecfs/document/10501189004404/1.
[25] https://www.sciencedirect.com/science/article/pii/S0160412025002338.
[26] 42 U.S.C. § 4332(2)(C).
[27] *See Hanly v. Kleindienst*, 471 F.2d 823 (2d Cir. 1972); *Sierra Club v. Morton*, 510 F.2d 813, 824 (5th Cir. 1975); *Henry v. Federal Power Commission*, 513 F.2d 395, 406 (D.C. Cir. 1975); *Swain v. Brinegar*, 542 F.2d 364, 369-70 (7th Cir. 1976).

degradation and biological effects of wireless facilities. Ignoring cumulative impacts further marginalizes affected communities including individuals with EMR-Syndrome, denying them meaningful protection under NEPA.

10) Conclusion

For the foregoing reasons, the DOI should engage in a formal Notice of Proposed Rulemaking with the 60-day public comment period, as required under the APA since the APA "good cause" exceptions have not been met. While efficiency in the permitting process is DOI's goal, industry has a responsibility to increase efficiency. Efficiency is not achieved by lessening NEPA requirements which may place Americans at risk, but by enforcing them rigorously, so that the wireless industry will be incentivized to innovate and exploit based on safety to people and the human environment. That aligns squarely with NEPA's goals, that while our natural resources are being exploited, that it be done safely without degradation of the human environment.

DOI's motto should be:

Americans first, then industry follows.

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

Respectfully Submitted,

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ADDENDUM A

BIOLOGICAL HAZARDS OF RF RADIATION

Biological Hazards of Wireless Radiation – Executive Summary

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 World Health Organization in 2025 (finding

increased risk of cancer, along with its initial Class 2B carcinogen classification in 2011), 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), Ripon, CA (4 children and 4 teachers developed cancer; one child died) and Eagle, ID (atrial fibrillations from 5G cell towers).

BIOLOGICAL HAZARDS OF WIRELESS RADIATION -- SOME HIGHLIGHTS

"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."[28]

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

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**

[28] 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.

hazardous to human health.[29] 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.[30]
b) Abruptly after these findings, the EPA was defunded from doing any further research on the biological effects of wireless radiation.[31]

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.[32]

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.[33]

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.[34]

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[29] 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.
[30] Ibid.
[31] Overpowered, What Science Tells Us About the Dangers of Cell Phones and Other WiFi-Age Devices, Martin Blank, PhD, 2014 at 110-112.
[32] 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.
[33] Swisscom patent, 2004 at 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.
[34] 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.

5. **RF Radiation is a Pollutant.** The telecom industry characterizes RF radiation as a pollutant in their device protection plans and disclaim insurance liability.[35]

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.[36]

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." [37]

8. **"Why Tech Leaders Don't Let Their Kids Use Tech."[38]** 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 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

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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.

[35] 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.

[36] https://ehtrust.org/key-issues/electromagnetic-field-insurance-policy-exclusions/.

[37] 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/.

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

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."[39]

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).[40] NTP found malignant heart schwannomas and malignant brain gliomas.[41] 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."[42]
    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 adequately tested."[43] **"**Overall, the NTP findings demonstrate the potential for RFR **to cause cancer in humans**."[44] [Emphasis added.]

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[39] Ibid.

[40] See letter of Dr. Birnbaum, former NIH and NTP Director, and hyperlinked amicus brief https://www.dropbox.com/scl/fi/nc7l00p8zxk8tj0l2a1yr/Dr.-Linda-Birnbaum-cell-tower-letter.pdf?rlkey=vq1i363i74umg9ybydrrhmn5d&st=q9l49h88&dl=0 ; see also, https://ehtrust.org/former-niehs-director-dr-linda-birnbaum-interviewed-about-cell-phone-radiation/.

[41] 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.

[42] 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.

[43] 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.

[44] Ibid, 11.

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.[45] The FCC averages exposure levels over 30 minutes,[46] 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.[47]

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[45] 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).

[46] 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).

[47] 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.blogs.com/files/5g-emf-hazards--dr-martin-l.-pall--eu-emf2018-6-11us3.pdf.

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) 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.[48] The FCC has not yet complied.

c) **FCC's Maximum Permissible Exposure Limit (MPEL)** are the limits of RF radiation for human exposure. MPEL allows for a very high human exposure limit of ten million microwatts per square meter. [49] The FCC has acknowledged a "worst-case" scenario of transmitters "operating simultaneously and continuously" at the MPEL with an individual "in the main transmitting beam and within a few feet of the antenna for several minutes or longer."[50] While the FCC dismisses this scenario as "extremely remote," it is allowing 4G and 5G cell towers to be installed[51] just feet from a home, business or school where individuals and children are in the main transmitting beam for many hours a day.

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

[48] https://media.cadc.uscourts.gov/opinions/docs/2021/08/20-1025-1910111.pdf
[49] 47 CFR 1.1310(e)(1)(II) shows 1 mW/cm2, which is equivalent to 10 million uM/m2, https://www.ecfr.gov/current/title-47/chapter-I/subchapter-A/part-1/subpart-I/section-1.1310.
[50] FCC's *Guidelines for Cellular Antenna Site Calculations,* https://www.fcc.gov/consumers/guides/human-exposure-radio-frequency-fields-guidelines-cellular-and-pcs-sites#:~:text=In%201996%2C%20the%20FCC%20adopted,lower%2Dpowered%20cell%20site%20transmitters.
[51] *In re Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Inv.*, 33 F.C.C.R. 9088, 9104-05 (2018).

d) The FCC's MPEL is based on IEEE (Institute of Electrical and Electronic Engineers) guidelines[52] which "have not been changed since 1991 and do not consider children."[53] Testing was performed on "a model head with dimensions based [on] the 90th percentile of U.S. military recruits in the year 1989. The corresponding body of the head would be a six foot, two inches, 220 lb. male."[54] A Specific Absorption Rate (SAR) – rate of absorption of electromagnetic radiation -- is then calculated based on thermal effects (heating tissue) of that model head.[55] However, biological effects from RF radiation are also non-thermal, documented by the studies cited herein, yet neglected in FCC testing.

e) The FCC failed to disclose that in 2019 when it tested cell phones next to the body (which is the way that the public typically uses cell phones), the cell phones exceeded the limits of RF radiation for human exposure. [56]

3. **A U.S. Naval Medical Academy Research** report from 1971 by Dr. Zory Glaser[57] linked 23 chronic diseases to RF radiation based on over 2300 studies.[58] 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.[59] The 2025 report states that Dr. Glaser reported biological effects and diseases related to the central and autonomic nervous systems, genetic / chromosomal, vascular, blood,

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[52] FCC guidelines are set forth at 47 CFR 1.1310, see note at (d)(4); see also, https://www.fcc.gov/consumers/guides/human-exposure-radio-frequency-fields-guidelines-cellular-and-pcs-sites#:~:text=In%201996%2C%20the%20FCC%20adopted,lower%2Dpowered%20cell%20site%20transmitters.

[53] *The Effects of RF-EMF on the Child Brain*, Aaron Skaist, Vol 12, No. 2, 2019, at 2, The Science Journal of the Lander College of Arts and Sciences, https://touroscholar.touro.edu/cgi/viewcontent.cgi?article=1218&context=sjlcas.

[54] Ibid at 3.

[55] Ibid.

[56] https://ehtrust.org/press-release-concealed-fcc-cell-phone-radiation-tests-show-human-exposure-limits-were-exceeded/.

[57] About Dr. Zory Glaser, https://zoryglaser.com/.

[58] https://www.magdahavas.com/wp-content/uploads/2010/06/Navy_Radiowave_Brief.pdf.

[59] 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.

metabolic, endocrine and gastrointestinal disorders.[60] In 1976, Dr. Glaser updated the total bibliography to 3700 reports relating to the biological effects of RF radiation.[61]

4. **A U.S. Air Force report** from 1994[62] states that "[i]t is known that electromagnetic radiation [EMR] has a biological effect on human tissue" covering a wide range including adverse cardiovascular, neurological and behavioral effects including the risk of cancer. Since 1956, the Dept. of Defense directed the Armed Forces (Army, Navy, Air Force) to study EMR. The report found that EMR can interact with human tissue's bioelectrical function and Eastern Europe and the then Soviet Union found that human tissue may be more sensitive to EMR's non-thermal effects.

5. **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.[63]
    a) The study coins the term **"radiowave disease"** to describe these effects.[64] 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.[65]
    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."[66]
    d) The degree of adverse effects **increased with more exposure**;[67] the lab animals had been exposed for 15 minutes a day for 60 days. It reported that when exposure ceases, disorders from low millimeter radio waves are reversible.[68] 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.

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[60] Ibid at 3.
[61] https://ehtrust.org/wp-content/uploads/Naval-MRI-Glaser-Report-1976.pdf.
[62] *Radiofrequency / Microwave Radiation Biological Effects and Safety Standards, a Review (1994),* Scott Bolen, Rome Laboratory, Griffiss Air Force Base, at 1, https://youandemf.com/wp-content/uploads/2025/01/EMR-US-Military-Report.pdf.
[63] https://mdsafetech.org/wp-content/uploads/2019/02/biological-effects-of-millimeter-wavelengths.-zalyubovskaya-declassif-by-cia-1977-biol-eff-mm-waves.pdf.
[64] Ibid at 57.
[65] Ibid at 60.
[66] Ibid at 59.
[67] Ibid at 59.
[68] Ibid at 58.

6. **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,[69] despite the fact that non-thermal exposure produces biological effects and disease, as documented herein.

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

1. **The World Health Organization's (WHO) International EMF Project Review of April 2025** of animal studies found reliable evidence that RF radiation increases the risk of cancer.[70] This reinforces the 2018 findings of cancer from the National Toxicology Program and the Ramazzini Institute. The WHO's results may lead scientists to call for the IARC to augment its carcinogenicity classification from "possible" Class 2B in humans set in 2011 to "probable" or "known" carcinogenicity in humans in 2025.[71] The objective of the new review was to systematically evaluate the effects of RF EMF exposure on cancer.

    a. **The WHO's IARC** classified EMF as a **Class 2B possible human carcinogen** in 2011[72] (similar to lead, diesel fuel and gasoline engine exhaust). This was based on "epidemiological observations in humans which exhibited higher risks 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."[73]

    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,"[74] i.e., did not heat tissue.

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[69] https://ehtrust.org/timeline-of-development-of-safety-limits-for-wireless-radiation-in-us/.
[70] https://www.sciencedirect.com/science/article/pii/S0160412025002338.
[71] See, e.g., https://icbe-emf.org/who-funded-study-reports-high-certainty-of-the-evidence-linking-cell-phone-radiation-to-cancer-in-animals/.
[72] https://www.iarc.who.int/wp-content/uploads/2018/07/pr208_E.pdf.
[73] 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}.
[74] 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}.

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 radiation.[75] 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).[76] 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."**[77] The WHO's April 2025 review reinforces that conclusion.

   i. The WHO recently commissioned a study by Karpidis, et al, which concluded in 2024 no hazards from wireless radiation,[78] however, the study has been found to be severely flawed with no scientifically valid assessment,[79] and its

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[75] https://www.who.int/news-room/questions-and-answers/item/radiation-5g-mobile-networks-and-health.

[76] 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

[77] 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=S16QI6-w9I8; 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.

[78] K. Karipidis, D. Baaken, T. Loney, M. Blettner, C. Brzozek, M. Elwood, C. Narh, N. Orsini, M. Röösli, 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.

[79] 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)

conclusion contradicted scientific evidence and was drawn from data showing hazards.[80] Researchers have called for a retraction of the study.[81]

ii. 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 more than 99% of those studies.[82] Researchers have called for a retraction of that study, as well.[83]

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.[84]

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*

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[80] "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=o77i19den485rdo2k4ktdzhgj&st=842p0rbv&dl=0.

[81] 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.

[82] 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.

[83] Ibid.

[84] 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}.

increased DNA damage][85] and genotoxicity [associated with increased DNA damage][86]. Therefore, the IARC Category should be upgraded from Group 2B to Group 1, a human carcinogen[87]."[88] [Some internal footnotes omitted]

3. **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."[89]

    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 . . . "[90]

4. **Panagopoulos, et al, *Review on human-made EMF's ion forced-oscillation and voltage-gated ion channel dysfunction, oxidative stress and DNA damage (2021)*.** "[E]xtremely low frequency (ELF) band, and the microwave/radio frequency (RF) band which is always combined with ELF, may lead to DNA damage [which is] connected with cell death, infertility and other pathologies, including cancer."[91]

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[85] 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.

[86] 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.

[87] 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.

[88] 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.

[89] EnvironHealth 21, 92 (2022). https://doi.org/10.1186/s12940-022-00900-9.

[90] Ibid.

[91] https://pmc.ncbi.nlm.nih.gov/articles/PMC8562392/Dr. Dimitris J. Panagopoulos is an EMF-biophysicist at the Choremeion Research Laboratory, Medical School, University of Athens, Greece, https://www.researchgate.net/profile/Dimitris-Panagopoulos-3.

5. **New Hampshire Commission** studied the biological effects of wireless radiation and issued a report Nov. 2020[92] 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." (see Appendix A, Dr. Chamberlin's letter explaining their findings).

6. **Thousands of scientific and medical studies** show neurological disorders; increased risk of cancer[93] 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.[94]

7. **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 arrythmia, burning skin, trouble concentrating.[95] The significance of

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

[93] *Mobile phone radiation causes brain tumors and should be classified as a probable human carcinogen (Review),* Journal of Oncology, https://www.spandidos-publications.com/10.3892/ijo.2015.2908.

[94] 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/.

[95] 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-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-

these reports is that non-ionizing radiation[96] from 5G — well below levels allowed by authorities — can cause health problems in individuals who had no prior history of electromagnetic sensitivity.[97] 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."[98]

8. **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.[99] Based on a population of 332.4 million people in the U.S.,[100] 120 million have symptoms, 2% of which (7 million) have severe symptoms or can't work.

9. **The Bioinitiative Report's** review of 1800 studies found biological effects of RF radiation which can occur within minutes of exposure,[101] and recommends no more than 0.1 microwatts per centimeter squared for human exposure[102] (compared to the FCC's MPEL of 580 microwatts per centimeter squared). Chronic or prolonged exposure to cell towers can result in biological effects; RF radiation exposures "prevent the body from healing damaged DNA, produce immune system imbalances, metabolic disruption . . . lower resistance to disease . . . pervasive impairment of metabolic and reproductive functions."[103]

1926.pdf?fbclid=IwAR2J-mE3XeBxqaXPQdFxslf9Q23bMCer9vgUBHnCvJXBrgBv-w7YdRUDwF0; see also, "The microwave syndrome or electro-hypersensitivity: historical background," https://pubmed.ncbi.nlm.nih.gov/26556835/.

[96] https://childrenshealthdefense.org/emr/emf-key-terms-descriptions/.

[97] https://childrenshealthdefense.org/emr/emf-wireless-health-impacts/.

[98] https://www.stralskyddsstiftelsen.se/two-studies-show-that-5g-caused-the-microwave-syndrome-in-healthy-persons/.

[99] "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.

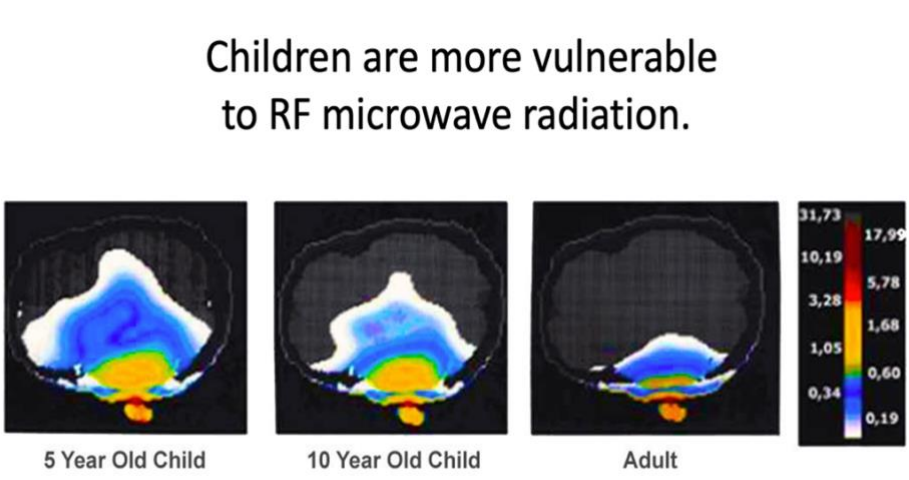
[100] https://www.commerce.gov/news/blog/2022/01/us-population-estimated-332403650-jan-1-2022#:~:text=As%20our%20nation%20prepares%20to,since%20New%20Year's%20Day%202021.

[101] *Key Scientific Evidence and Public Health Policy Recommendations*, Supplement 2012, at 4, 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/; see also, BioInitiative 2012 Conclusions, https://bioinitiative.org/conclusions/.

[102] *Key Scientific Evidence and Public Health Policy Recommendations* 2007, at 22-23, https://bioinitiative.org/wp-content/uploads/pdfs/sec24_2007_Key_Scientific_Studies.pdf.

[103] *Key Scientific Evidence and Public Health Policy Recommendations*, Supplement 2012, at 4, https://bioinitiative.org/wp-

10. **Children absorb more RF radiation and are at greater risk than adults**.[104]
    a. **From cell phones:**[105]



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.[106]

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content/uploads/pdfs/sec24_2012_Key_Scientific_Studies.pdf.https://bioinitiative.org/; see also, BioInitiative 2012 Conclusions, https://bioinitiative.org/conclusions/.

[104] 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/.

[105] 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/.

[106] *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/.

c. **Greater risk for fetuses:** risk of "degeneration of the protective myelin sheath that surrounds brain neurons."[107]

d. **School-age children:** risk of "[d]igital dementia."[108]

e. **Childhood leukemia**, increased risk**.**[109]

f. **Potential dangers of cell towers near schools.**[110]

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.[111]

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.[112]

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[107] *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.

[108] *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.

[109] *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.

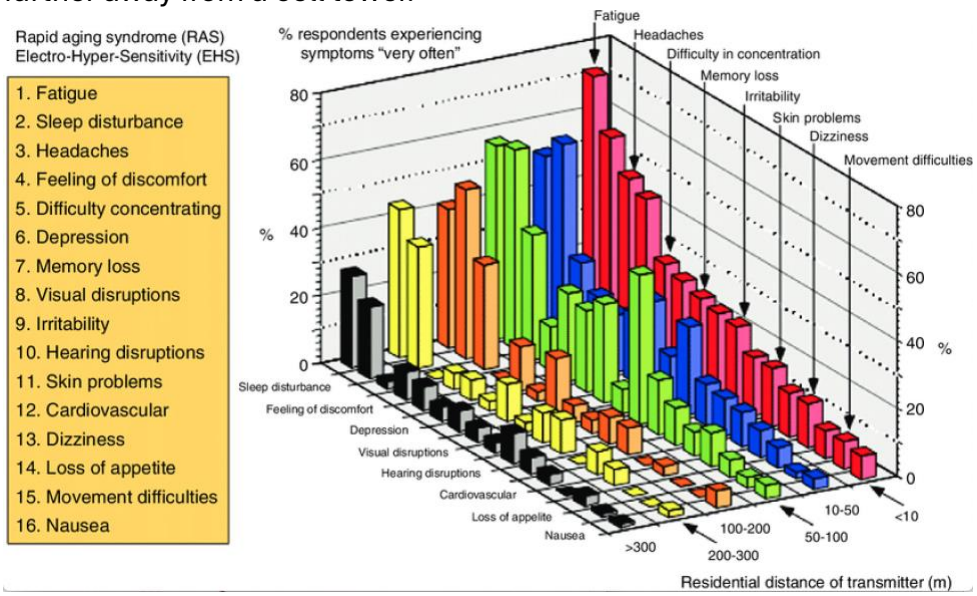
[110] Dr. Magda Havas: WiFi in Schools is Safe. True or False? https://www.youtube.com/watch?v=6v75sKAUFdc.

[111] *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.

[112] 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/.

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.[113]

11. **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. [114]



Symptoms experienced by people near cellular phone base stations; RF radiation affects the blood, heart and autonomic nervous system.[115] Source: Santini, et al (France): Pathol Biol. 2002;50:S369-73; Dr. Magda Havas, PhD.

12. **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,

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[113] Child With Heart Problems From Wireless: 5G Health Risks California SB 649 Hearing, https://www.youtube.com/watch?v=OgNLR9fQOX4&list=PLT6DbkXhTGoDakSqp1i_7milpwGx4xMFq.

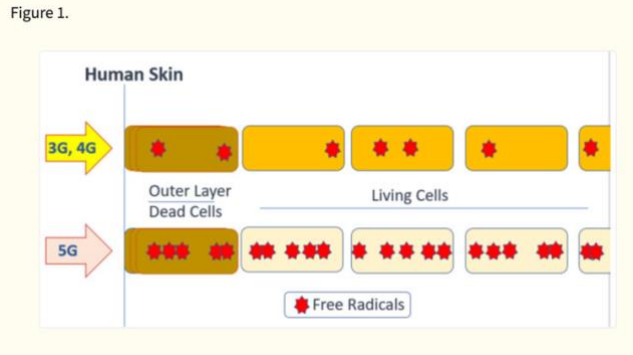
[114] *Cell Tower Health Effects*, Physicians for Safe Technology, https://mdsafetech.org/cell-tower-health-effects/.

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

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**." [116]

13. **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 band and the skin, our largest organ, can intensely absorb the higher 5G frequencies.[117] 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."[118] 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.[119]

Figure 1.



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[116] 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.

[117] 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.

[118] 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.

[119] 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.

14. **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.[120]

15. **"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.[121] Other scientists have joined in consensus statements.[122]

16. **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.[123]

17. **Increases in brain cancer** in the U.S. have been reported, with scientists attributing a high probability on RF radiation from cell phone use.[124]
18. **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 Clusters Near Cell Towers

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[120] "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 | https://doi.org/10.3389/fcvm.2025.1499499; see also, https://ehtrust.org/cellphones-and-your-blood-what-you-need-to-know/.

[121] 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/.

[122] https://phiremedical.org/wp-content/uploads/2020/11/2020-Non-Ionising-Radiation-Consensus-Statement.pdf.

[123] https://www.iaff.org/cell-tower-radiation/.

[124] 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/.

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.[125]

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, most of whom evacuated their homes.[126] 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."[127] 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 Ripon, 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.[128] One of the children who contracted brain cancer (glioblastoma) when he was 10 years died in Aug 2024.[129] After the 4th student was diagnosed with cancer, the tower was removed.[130] Since the tower was removed, it was reported that there were no more instances of cancer at the school.[131]
    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.[132]

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[125] https://childrenshealthdefense.org/defender/marcia-haller-cell-tower-rf-radiation-sickness/.
[126] 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.
[127] https://ehtrust.org/family-injured-by-cell-tower-radiation-in-pittsfield-massachusetts/.
[128] See beginning of video at https://www.youtube.com/watch?v=-9TMTexPb_0&t=128s .
[129] 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.
[130] https://mdsafetech.org/2019/03/25/cell-tower-to-be-removed-after-4th-ripon-student-diagnosed-with-cancer/.
[131] See beginning of video at https://www.youtube.com/watch?v=-9TMTexPb_0&t=128s .
[132] 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 A

University of New Hampshire

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February 13, 2023

Queens Community Board No. 12
90-28 161st Street
Jamaica, New York 11432

Dear Community Board Members:

I am writing you as a former member of the New Hampshire State Commission that was tasked with exploring the Environmental and Health Effects of Evolving Wireless and 5G Technology. This Commission was formed through bipartisan legislation and was supported by the governor. The Commission was comprised of unbiased experts in fields relating to health and radiation and were highly qualified to evaluate the issue in a fair and in-depth manner. The Commission submitted its final report in November 2020, with 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.

My purpose in writing is to alert you to the dangers of siting a cell tower near to where people, particularly young people, live, work or recreate. I provide relevant details about the New Hampshire Commission's findings on this issue in a presentation I gave to the Lenox, MA Board of Health. Please know that the International Association of Fire Fighters (IAFF) in 2004

adopted a position statement still in effect today forbidding wireless communication facilities on or near fire stations as firefighters were being injured by the radiation. Many of the firefighters exposed to the wireless radiation could not remember where they were going during emergencies, nor how to administer CPR. As Dr. Gunnar Heuser indicates at the EMF Medical Conference, functional MRIs showed damage to the gray matter of their brains from the radiofrequency radiation exposure.

Scientists, physicians, environmental and public health physicians, epidemiologists, pediatricians along with engineers such as myself have been calling for state and local governments to be proactive in protecting your citizens against radiation exposure. I realize that providing such protection may seem challenging. However, initiatives such as the New Hampshire Commission and the successful lawsuit brought about by the Environmental Health Trust and others are exposing the dubious claims by the FCC that wireless radiation is harmless. Given the mounting evidence regarding the clear harm of radiation, it is only a matter of time before meaningful protective regulations are put in place.

While telecom companies currently have the upper hand in that they seem to be able to force communities to accept whatever tower sites they mandate, there are actions that those communities can take to delay or stop installations where people will be excessively exposed. For example, citizens in York, Maine have delayed the installation of antennas positioned close to a neighborhood. The Board of Health in Pittsfield, Massachusetts issued a cease-and-desist order against Version regarding a cell tower that was causing illness in a surrounding neighborhood. There are many other examples where citizens and administrators have worked together to protect people against cell tower radiation. Those examples can be used to strengthen your ordinances to help protect against inappropriate cell tower siting.

I am currently working with my state legislators to pass legislation that would provide protections against excessive radiation exposure. The original legislation called for a 1,640-foot setback for all new cell towers; this setback is one of the recommendations made by the New Hampshire Commission, and the rationale for picking that distance is explained here. The legislation is currently being revised so that it can be acted on in the next legislative session.

Wireless radiation dangers are real, and they can be significant in their impact on human health and the environment. I encourage you to do whatever is within your power to protect your constituents against it.

Sincerely,

Kent Chamberlin, PhD

Professor & Chair Emeritus

Fulbright Distinguished Chair