

**Before the
Architectural and Transportation Barriers Compliance Board ('Access Board')**

In the Matter of:)
Public Comment on Public Universal Changing) Docket No. ATBCB-2026-0001
Stations)

**COMMENTS OF ADVOCATES FOR THE EMR SYNDROME DISABLED
TO THE U.S. ACCESS BOARD**

April 20, 2026

FILING PARTIES

The parties listed in Attachment A, collectively constituting the “Advocates for Individuals Disabled by Electromagnetic Radiation (EMR) or Individuals with EMR-Syndrome,” have given their permission to be included here and join together to submit these Comments:

INTRODUCTION

We are commenting on the issuance of an Advance Notice of Proposed Rulemaking (ANPRM) regarding “establishing accessible design standards for universal changing tables and standards on the privacy, accessibility, and sanitation equipment of the room in which a universal changing table is located, pursuant to the FAA Reauthorization Act of 2024.”¹

We commend the Architectural and Transportation Barriers Compliance Board (Access Board) on proposing rules that would make adult changing tables and rooms at some airports accessible to people with disabilities. Those disabled by electromagnetic radiation (EMR), including supraharmonics (commonly known as dirty electricity), are also people who may need access to changing tables and rooms, with additional requirements for access.

In 2002, the U.S. Access Board officially recognized Electromagnetic Sensitivity (currently termed by advocates as Electromagnetic Radiation Syndrome or EMR Syndrome) as a disabling condition.² The Board determined in 2004 that “Electromagnetic sensitivities may be considered disabilities under the ADA if they so severely impair the neurological, respiratory or other functions of an individual that it substantially limits one or more major life activities.”³

¹ <https://www.federalregister.gov/documents/2026/02/18/2026-03199/accessibility-standards-for-universal-changing-stations>. Accessed 3/10/26.

² Final rule at <https://www.govinfo.gov/content/pkg/FR-2004-07-23/html/04-16025.htm>.

³ <https://www.access-board.gov/research/building/indoor-environmental-quality/>.

The National Council on Disability (NCD) recognized, in its 2022 Health Equity Framework, electromagnetic injury and disability from exposure to “low level” electromagnetic exposures, including from “the usage of wireless communications and electrical technologies and other sources of [electromagnetic] radiation, which may trigger disabling and life-threatening cardiac, respiratory, neurological, and other adverse physical reactions,” which may “preclude access to care and treatment at medical, dental and at other providers’ offices, hospitals, surgical centers, and other healthcare and healthcare–related facilities.”⁴

In spite of these recognitions, and the tireless efforts of individuals with EMR Syndrome, as well as those with other disabilities that are exacerbated by exposure to EMR, they remain an underserved population. For the purposes of this comment, we will refer to them as individuals with disabilities exacerbated by EMR or as having EMR Syndrome.

This class of individuals with disabilities continues to lack access to even the most basic needs and services, including travel by air and other means. The generalized lack of awareness of EMR Syndrome throughout society not only puts the lives of these individuals at risk, it also forces them to choose between access to vital places, services and activities—which almost invariably imply forced exposure to high levels of EMR—versus having their needs unmet in an effort to avoid potentially disabling and/or life-threatening EMR exposure.

Air travel exposes passengers to extremely high EMR exposure, including at the airport and onboard aircraft. Many individuals with EMR Syndrome cannot tolerate air travel at all, as their specific disability needs to avoid EMR exposure are typically not accommodated—a situation that must be addressed urgently.⁵ In spite of this, many such individuals make the difficult decision to travel by air, which normally results in aggravation of their conditions in the short, mid, and/or long term. Some individuals with EMR Syndrome develop neurological and/or motor skill disabilities when exposed to EMR at airports, including difficulty or inability to walk, think or communicate, among others.^{6 7} As a result, they may need to use these adult changing stations. It is therefore imperative that these facilities are accessible to them. Furthermore, accommodation must also be provided throughout airports and while onboard aircraft.

The current societal trend is to increasingly expand the use of wireless technologies (despite that they may be life threatening)⁸, including in medical vehicles or devices as well as devices intended otherwise to expand accessibility and independence for individuals with certain disabilities. This tendency adds ever more—often insurmountable—barriers for individuals disabled by EMR, which often lead to additional, sometimes permanent, injuries and disabilities on top of EMR Syndrome. By the same token, people with other disabilities have developed and can continue to develop a secondary or compounded disability due to their continuous exposure to EMR.⁹ EMR Syndrome has been characterized as an escalating humanitarian crisis that requires an urgent response by the

⁴ https://www.ncd.gov/assets/uploads/reports/2022/ncd_health_equity_framework.pdf.

⁵ Airlines will typically provide accommodation for mobility, cognitive, and other impairments that may result from EMR exposure; however the real accommodation need is to provide a safe environment where individuals with EMR Syndrome could avoid these exposures and consequent symptoms and injuries in the first place.

⁶ See <https://thenationalcall.org/wp-content/uploads/2025/07/2-Science-Biological-Effects-Highlights-7-1-2-5-.pdf>.

⁷ Susie Molloy and Donna Ott, personal communications, April 2026.

⁸ See footnote *supra*.

⁹ See footnote *supra*.

International Commission on the Biological Effects of Electromagnetic Fields (ICBE-EMF).¹⁰ We could not agree more.

It is essential to ensure that the lives of individuals with EMR Syndrome are not further jeopardized in an increasing number of scenarios due to a failure to understand and accommodate their needs, which are protected by several laws.

As former NCD Chair Andres Gallegos expressed during the May 12, 2022 Council Meeting:

"...addressing health equity for people with disabilities is incomplete without addressing neglected needs of a growing demographic of people with . . . electrosensitivities who because of these sensitivities cannot even enter healthcare facilities to access basic or emergency care due to severe neurological and physical reactions to exposures of these pollutants."

We urge the Access Board to ensure that the unique needs of individuals with disabilities exacerbated by exposure to electromagnetic radiation (EMR), especially those with EMR Syndrome, are addressed when developing rules and standards for universal changing tables. Attachment B provides a summary of the biological effects of EMR concluded by the federal government, industry and independent scientists, as well as chronic disease clusters attributed to EMR.

See the EMRSyndrome.org website for many stories of real people with EMR Syndrome. The following are just a few excerpts:

¹⁰ The ICBE-EMF refers to EMR Syndrome as electromagnetic hypersensitivity (EHS). They further state that "EHS persons must be provided with low EMF spaces for residence, work, school and general public domain access. Low EMF essential spaces need to be urgently established—not just to reduce severity for people with EHS, but to broadly reduce the incidence of EHS." <https://icbe-emf.org/activities/electrohypersensitivity>. Accessed 10/23/24.



“With all wireless off, my health improved ‘as if by miracle.’
 Bonjour... my name is Agnes and I'm a graphic artist from Brittany, France. In 2022, when turning on a new Wi-Fi router, I had an...

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“I believe struggle can build vision.
 My name is Titus and I'm from Kenya. I lived with EMR Syndrome for ten years, first noticing headaches, poor focus, and mood swings in college before linking them to...

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 My name is Margaret Ruth, and thus began my journey into a nightmare...

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"McKenzie's Story as told by his mom, Susan.
 My son, McKenzie, loves to paint acrylics and do chalk drawings in our driveway. Although 31 years old, he's like a 5-year-old. McKenzie has multiple neurological disabilities...

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There are further resources at emrsyndrome.org and <https://www.ma4safetech.org/resources>

QUESTIONS FOR PUBLIC COMMENT

A. Standards for Universal Changing Tables

Question 1: *Is the better approach to incorporate the industry standard, section 613.4 of ICC A117.1-2017 with Supplement 1, by reference or to develop an original standard derived from existing federal accessibility standards? Please explain.*

We recommend that the Access Board incorporate the existing industry standard as a baseline but also include the standards discussed herein.

The standard should address the specific needs of individuals with disabilities exacerbated by exposure to EMR – those with EMR Syndrome. Namely, the standards should require that the levels of EMR in adult changing stations be absent or low enough to be tolerated by individuals with EMR

Syndrome. Typically, levels should be below 10 microwatts per square meter ($\mu\text{W}/\text{m}^2$), though it may need to be even lower for some people.¹¹

Some of the aspects that should be considered when developing standards include:

- Height adjustments to the changing tables should be provided without resorting to wireless technologies, mobile phone apps, or any other technologies that emit wireless radiation.
 - Ideally, these adjustments should be made by mechanical means rather than electric-powered motors, as these emit electric and magnetic fields, and the wiring conducts and radiates supraharmonics (colloquially termed dirty electricity) and other emissions, which pose an access barrier for people with EMR Syndrome.
 - At a very minimum, there should be a manual mode operation available. If any wireless features were present, there should be an easy and intuitive way to shut it off completely (e.g., with one button or switch) with clear signage in various languages, pictograms and Braille.
 - If the table is electric-powered, it should be possible to unplug it (or, better yet, to shut off the entire electric circuit) after adjusting its height, to avoid exposure of users with disabilities exacerbated by EMR exposure, including those with EMR Syndrome.
- The changing table should be installed away from electrical wiring and/or adequate shielding should be provided to minimize exposure to EMR and EMFs while in use.

We urge the Access Board to develop these standards in close collaboration with individuals with EMR technical and medical expertise as well as individuals with EMR Syndrome and their advocates, such as the Building Biology Institute, Physicians for Safe Technology, the Electrosensitive Society, The National Call for Safe Technology (which is developing Accommodation Guidelines for individuals with EMR Syndrome), the EMR Syndrome Alliance, and the numerous Safe Tech groups throughout the US. Consider that individuals with disabilities have higher than average difficulties advocating for themselves and navigating their accommodation requests while facing steep and increasing access barriers. The Access Board should establish clear avenues of contact and mechanisms to actively engage with this extremely vulnerable population and accept its input. This applies to the development of standards for adult changing stations as well as all other actions by the Access Board.

Question 2: *Were the Access Board to incorporate by reference section 613.4 of ICC A117.1-2017 with Supplement 1, are there any provisions that should be modified or added?*

Yes. In addition to the provisions presented in the previous question:

- Signage

¹¹ Supplement to the Standard of Building Biology Testing Methods SBM-2024. Building Biology Evaluation Guidelines for Sleeping Areas. https://buildingbiology.com/site/downloads/SBM-2024_EVALUATION_GUIDELINES_EN.pdf accessed 04/16/26.

- If any EMR-emitting features are present, signage should clearly indicate how to turn them off.
- Signage should clearly indicate that wireless devices are not allowed when an individual with EMR Syndrome is using the room. This may apply to other users (if the facility can be used by more than one individual simultaneously), cleaning staff, emergency responders, etc.
- Signage should be posted in multiple languages as well as pictograms, to clearly convey the messages to both caregivers and individuals with disabilities

Question 3: *As described above, existing federal and industry standards diverge with respect to the height range and intermittent heights of the table surface. The Board is seeking to accommodate the widest range of individuals with disabilities who need to transfer onto and from universal changing tables, as well as caregivers of different heights who must accomplish the tasks without additional assistance. The Board is thus considering requiring the height of this surface to be continuously adjustable within a specified range, which is different than the existing federal and industry standards. The Access Board seeks public comment on the best approach to height adjustability and the optimal range.*

Continuous adjustment of changing tables height may more easily accommodate a wide range of needs of individuals with disabilities and their caregivers. However, in order to accommodate the widest range of individuals with disabilities, the technology employed must be such that it does not create an access barrier for the large and growing population of individuals disabled with EMR Syndrome, while still addressing other disabilities and any related access needs. Thus, we emphasize the need to avoid, or being able to shut off, any and all sources of wireless and conducted emissions, as well as electric and magnetic fields, as stated in the answer to Question 1.

Question 4: *Please provide information about height adjustability of universal changing tables currently available on the market, and whether existing models are continuously adjustable.*

Electric-powered changing tables are currently promoted as the “safest and most accessible to everyone”.¹² This, however, is not the case for individuals with disabilities exacerbated by exposure to EMR. Please see answers to Questions 1-3 for our recommendations.

We urge the Access Board to work with industry to engineer changing tables (and other devices, especially those intended for individuals with disabilities) that eliminate or minimize EMR and EMFs and are thus inclusive of this currently neglected population while protecting all other individuals with disabilities from potentially developing EMR Syndrome as a cross disability due to exposure to EMR and/or EMFs.

Question 5: For sanitation, should the Access Board require that the universal changing table have a non-porous surface?

¹² Changing Spaces Campaign. About Universal Changing Tables. <https://www.changingspacescampaign.com/about-adult-changing-tables>. Accessed 3/10/26.

Please consider that metallic surfaces are conductive and also act as antennas, receiving and re-radiating EMR and are thus contraindicated for individuals with disabilities exacerbated by exposure to EMR, including those with EMR Syndrome.

Question 6: What other specifications not addressed above, if any, should be required?

Be mindful of gender preferences of individuals with disabilities when communicating their disabilities, accommodations needs, requests for assistance, etc. For example, it might be unacceptable in some cultures for a female to communicate such needs to a male.

Other considerations may be strictly beyond the issuance of design standards however may directly or indirectly relate to the use of universal changing rooms and may inform the overall process and needs of individuals with EMR Syndrome and other disabilities:

- Air travel and airports can be particularly taxing experiences for individuals with disabilities, including stressful situations, pollution, food, etc. The high EMR levels add another layer of toxic exposure for people with EMR Syndrome. This may result in cognitive and speech impediments, and language barriers may compound the problem (e.g., for international travel, as well as for non-native speakers). This could be addressed by:
 - Having bonded airport personnel, licensed to act as personal care attendants.
 - Having competent staff at the airport who can communicate in sign language.
 - Checking for notes the individual or caregiver may provide
 - Providing pencil and paper if appropriate
 - Having word boards in different languages
- Airport personnel and, particularly, emergency responders need to be trained on how to properly assist individuals with disabilities, especially those with EMR Syndrome (see also answer to question 7). Examples of such assistance for individuals with EMR Syndrome include:
 - Refraining from using wireless devices in proximity of such individuals, including personal devices (mobile phones, wearable devices, etc.) and medical devices (monitors, pumps, etc.)
 - Following instructions provided by the individuals with disabilities or their caregivers
 - Avoiding electric-powered wheelchairs with batteries
 - Avoiding vehicles with wireless features as well as electric or hybrid-electric vehicles with strong electric and magnetic fields
 - Moving the individual to designated low-EMR Safe Zones, away from wireless access points, body scanners, etc.

- Certain sounds and lights can act as seizure triggers, including beeping sounds and flashing lights. These should be turned off or minimized as much as possible, and it should be noted that individuals with disabilities may need protective equipment such as ear protectors and dark glasses.
- Individuals with disabilities may be temporarily disabled when exposed to air pollution such as vehicle exhaust and cigarette smoke. Such areas should be avoided as much as possible. E.g., if assisting the passenger with ground transportation, allow him or her to wait inside until transaction arrives.
- For individuals with EMR Syndrome in need of wheelchairs, avoid electric powered ones

B. Standards for the Rooms in Which Universal Changing Tables Are Located

Question 7: What elements that are essential for assisted toileting should be required in the room where a universal changing table is located? Please provide specific information as to the purpose of each recommended element.

In general, avoid any features that produce, directly or indirectly, wireless emissions, supraharmonics, conducted emissions, and/or ELF (extremely low frequency) electric and/or magnetic fields.

Wireless devices and features (such as cell phones, smart devices, Wi-Fi and others), including those otherwise intended to improve the lives of people with disabilities other than EMR Syndrome, are generally “overpowered” with EMR, meaning that the intensity of the signal is much stronger than needed for it to function, resulting in unnecessary excess exposure. Instead, these devices should be redesigned to be as safe as possible by minimizing EMR emissions, adding EMR shut off buttons, and other engineering solutions.¹³ Ways of accommodating individuals with disabilities exacerbated by EMR must be developed, urgently. And, before adopting new wireless technologies at airports or other public places, the Precautionary Principle must be applied, proactively, carefully evaluating how these technologies may affect the most vulnerable populations, and how these populations’ health and protected rights to freely access public places and services will be guaranteed, as opposed to further eroded, especially when it comes to individuals with disabilities that are exacerbated by EMR. Such actions will also reduce the risk for the public of developing the biological and health sequelae of exposure to electromagnetic fields. In addition, individuals with disabilities who rely on wireless devices for accessibility should be educated on how to minimize their exposures (and the non-consensual exposures of those around them), as well as on the risks and benefits of engaging with such technologies.

Individuals with disabilities using these rooms may also depend on a variety of medical devices and/or implants that can be affected by EMR. Wireless emissions and electromagnetic interference (EMI)¹⁴

¹³ As an example, Heroux et al. proposed low cost software and hardware modifications for cellular phone radiofrequency radiation (RFR) exposure mitigation. *Int J Environ Res Public Health*. 2023 Apr 4;20(7):5398. doi: [10.3390/ijerph20075398](https://doi.org/10.3390/ijerph20075398). Similar measures could be applied to other wireless devices.

¹⁴ Electromagnetic Interference (EMI) is the disturbance caused by electromagnetic signals that disrupt the operation of electronic circuits or communication systems. It occurs when an external electromagnetic field interacts with electrical components, causing malfunctions, noise, or absence of signal. <https://www.britannica.com/science/electromagnetic-field>. Accessed 05/09/25.

can affect and compromise the functionality of medical devices such as cardiac defibrillators, pacemakers,¹⁵ glucose monitors, insulin pumps, and deep brain stimulators,¹⁶ among others, putting the life of the wearer at risk.

Users of these rooms may include individuals disabled with Multiple Chemical Sensitivities (MCS), who will need avoidance of scented and / or strong chemicals.

In order to make the Universal Changing Rooms accessible to these populations, the following should be required, at a minimum:

- Conduct an EMR survey to locate all wireless devices emitting radiation that penetrates the room, using a good quality EMR meter (e.g., Safe and Sound Pro II or professional equipment). In complex environments such as airports, it is advised to hire an EMR professional, who would be best positioned to assess and recommend the safest and most adequate strategies for each particular situation.
- Locate the room as far away as possible from any sources of wireless radiation and/or
- Eliminate wireless sources in proximity of the room and/or
- Shield any wireless sources that may be emitting radiation that penetrates the room (e.g., use a signal tamer to shield a nearby wireless access points) and/or
- Consider shielding the room from external wireless sources. This must be done by a professional, as not all situations are suitable for full room shielding. For example, shielding would not be appropriate if there are wireless sources within the room, including emissions from users' personal or medical devices such as cochlear implants, or any implants that emit wireless radiation.
- Use incandescent or softer lights with adequate filters to minimize or eliminate supraharmic / dirty electricity / conducted emissions as well as the flicker that often trigger or exacerbate symptoms and disabilities for many individuals with EMR Syndrome of MCS

¹⁵ The American Heart Association recommends avoiding or at least limiting exposure to the following devices that may interfere with implantable cardioverter defibrillators (ICDs) and pacemakers: Anti-theft systems (also called electronic article surveillance or EAS), such as those found at department stores, headphones, radios, electric fences and electrical pet containment systems, medical alert systems and fall detection pendants, among others. <https://www.heart.org/en/health-topics/arrhythmia/prevention--treatment-of-arrhythmia>. Accessed 05/09/25.

Cardiac implant manufacturers warn of electromagnetic fields from common items having the potential to affect the operation of these implanted devices. These devices are especially sensitive to magnets, which are used to change settings, but also many other items. Medtronic. Answers to questions about implantable cardiac devices: Electromagnetic compatibility guide. <https://www.medtronic.com/content/dam/medtronic-com/products/cardiac-rhythm/pacemakers/files/electromagnetic-compatibility-patient-guide.pdf>. Accessed 05/09/25.

¹⁶ Deep brain stimulation devices are used to treat movement, obsessive-compulsive, and epilepsy disorders that are refractory to medical therapy. Malfunctions have been reported where these devices turn on or off, lose therapeutic effect, or otherwise malfunction due to a variety of EMR sources, including: at a security booth at an airport, during an MRI scan, when operating a cordless drill, at movie theaters, in cars with stereo systems, when bringing a cell phone up to the ear, among others. Clin Neurol Neurosurg. 2021 April ; 203: 106577. doi:10.1016/j.clineuro.2021.106577. Available at <https://pmc.ncbi.nlm.nih.gov/articles/PMC8081063/pdf/nihms-1695287.pdf>. Accessed 05/09/25. Note that the adverse effects are most likely under-reported.

- Do not install any “smart” appliances, sensors, modules, or any other features that emit wireless radiation and/or require additional wiring and/or produce additional supraharmonics or conducted emissions. For example, do not use wireless systems to monitor for odors or chemicals.
- Do not install any features that require or promote the use of cellphones or other devices emitting wireless radiation
- Provide paper towels or cotton towels on rollers, as electric hand driers produce EMR
- Avoid the use of sensors for toilets, sinks, soap dispensers, towel dispensers, or other amenities. The sensors can be problematic for some individuals with EMR Syndrome
- Provide unscented soap. Avoid using scented or strong-smelling or scented soaps and cleaning products. Place no-scent signs in different languages and pictograms
- Provide non-latex disposable gloves
- Provide trays and hooks to put or hang valuables, hats, etc.
- Provide face masks.
- Provide a vending machine for non-scented diapers in different sizes (children, petite to plus sizes)
- Provide a garbage can to dispose of sanitary supplies, soiled towels or clothes. Conditions at airports and aircraft may trigger unexpected symptoms in vulnerable individuals, including incontinence
- Provide a disposal container for sharps (e.g., for diabetes medication, disposable shavers, etc.)
- Provide manual flushing as an option (e.g., with a lever, button, etc.) This should be labeled with a pictogram. It might be essential in some cultures to ensure one can privately dispose of bodily excretions
- Provide a full body mirror. After being assisted, the individual with disabilities may want to check that they are decent and adjust their garments if needed to conform with any specific cultural norms. It may be advantageous to be able to tilt the mirror with a handle
- Provide a cord or lever with a bell, or some way to request emergency response.
- Emergency responders and other personnel:
 - Must be educated on their responsibilities and obligations when it comes to engaging with, and accommodating the needs of, individuals with EMR-related disabilities in accordance to the FAA, ADA and other laws.

- Must be educated on the biological and health effects of EMFs, the disabilities and life-threatening symptoms that EMR can trigger in some individuals,¹⁷ and the need for inclusive emergency management plans, procedures and protocols. A multitude of organizations can be tapped to provide such training, including, but not limited to, the following:
 - The EMR Syndrome Alliance, which recently launched a new website providing many educational resources and testimonials on EMR Syndrome with supporting science for the public as well as physicians, healthcare providers, policymakers and others. This website can provide an overview of the needs of this underserved population and links to relevant organizations: www.EMRsyndrome.org
 - The Electrosensitive Society, in Canada, has developed guidelines and educated medical and emergency response professionals on the needs of individuals disabled by EMR. They have worked with hospitals and emergency responders to successfully accommodate this disability. They are uniquely positioned to train emergency responders: <https://www.electrosensitivesociety.com>
 - The EMF Medical Conference 2021 was designed to educate doctors and other health professionals. All the videos are available online at no cost, providing an excellent resource for physician continuing education about the diagnosis, treatment and prevention of the biological and health effects of EMR, including the needs of people with EMR Syndrome, as well as EMR mitigation strategies <https://emfconference2021.com>
 - Physicians for Safe Technology, the American Academy of Environmental Medicine (AAEM), and the National Association of Environmental Medicine (NAEM) are among the health professionals' organizations that recognize EMR Syndrome and its disabling effects.
 - The Building Biology Institute has expertise on measuring and mitigating EMR sources: <https://buildingbiologyinstitute.org/>
 - The National Call for Safe Technology <https://thenationalcall.org/>, Americans for Responsible Technology <https://www.americansforresponsibletech.org/>, and numerous country-wide, state and local Safe Tech groups throughout the USA have a wealth of resources and connections with their communities as well as with other organizations and professionals in the field.

Question 8: *Should the Access Board incorporate by reference A117.1-2017, Section 613.2.1 instead of creating its own standard based on existing Federal accessibility guidelines? If so, should the Access Board include any additional requirements that go beyond the referenced standard?*

See answer to question 7.

¹⁷ See footnote *supra*.

Question 9: *The sanitation equipment required by ICC A117.1-2017 with Supplement 1 includes a sink and a soap dispenser. What other types of sanitation equipment, if any, should be required?*

It should be specified that the operation of any sanitation equipment does not rely on electronic or wireless sensors, technologies or mechanisms. In addition, it should be specified that the disinfection method should not rely on chemicals that might trigger reactions in individuals with MCS, respiratory, skin and other vulnerabilities.

Question 10: *With respect to privacy of the room, the Access Board will likely include a requirement that the door to the room be lockable from the inside. What other specifications for privacy, if any, should be required?*

Privacy should be provided by means that do not pose an access barrier to individuals disabled with EMR Syndrome. Avoid “smart” locks, sensors, or any devices emitting wireless radiation.

Large print signage in different languages, pictograms and Braille should be posted to show how to lock and unlock the room.

The room would, ideally fit one individual with disabilities (and their caregiver) at a time. This would allow for gender preferences to be accommodated, as well as remove potential stress from other users bringing service animals or wireless devices, potential for predators to enter the same room, etc.

There should be disclosure as to whether any pest control chemicals were sprayed, and when it was done, for safety considerations.

C. Costs of Providing Universal Changing Tables Required by the FAA Reauthorization Act

No comment.

CONCLUSION

We look forward to working with the Access Board to address the needs of individuals with disabilities exacerbated by EMR—especially those with EMR Syndrome—in the development of standards for adult changing stations at airports.

Respectfully submitted,

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ATTACHMENT A

FILING PARTIES

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.

National Organizations – Filing Parties
Wired Broadband, Inc., 501(c)(3), Odette J. Wilkens, President & General Counsel
The National Call for Safe Technology, Inc., 501(c)(4), Odette J. Wilkens, President & General Counsel
The Weston A. Price Foundation, 501(c)(3), Sally Morell Fallon, President, Washington, D.C.
Alliance for Natural Health-USA, Robert Verkerk, PhD, Executive and Scientific Director, Alexandria, VA

U.S. State	Filing Parties
AK - Alaska	Hal Stachman, Sitka, AK
AL - Alabama	Donald Campbell, Huntsville, AL
AR - Arkansas	PACTS International, Ken Stroud, Advisory Board Member/Technical Director, with Havana Syndrome, Little Rock, AR
AZ - Arizona	Arizonans for Safe Technology, AZ
	EMF Wellness Tucson, Lisa Smith, PhD, Tucson, AZ
	Safe Tech Tucson, Tucson, AZ
	Floris R. Freshman, published artist and composer, with EMR-Syndrome, Scottsdale, AZ
	Susan Molloy, M.A., Snowflake, AZ
	Melissa Hayes, M.S. with EMR-Syndrome, Oro Valley, AZ, Oak Haven Wellness, LLC
	Renée Neumann, Tucson / Green Valley, AZ
	Kathy Flanagan, with EMR-Syndrome, Prescott Valley, AZ
	Karen Carswell, Flagstaff, AZ
Warren Woodward, Sedona, AZ	
CA – California	EMF Safety Network, Sidnee Cox, Co-director, Windsor, CA
	Fiber First LA, Charlene Hopey, Topanga, CA
	Malibu for Safe Tech, Lonnie Gordon, Executive Director, Malibu, CA

	Napa Neighborhood for Safe Technology, Amy Martenson, Napa, CA
	Safe Tech International, Sara Aminoff, Union City, CA
	5G Free California, Julie Levine, with EMR-Syndrome, Topanga, CA,
	California Brain Tumor Association, Ellen Marks, Director, Indian Wells, CA
	Sustainability Management Consulting, Angela Casler, Chico, CA
	Eagle Forum of California, Orlean Koehle, CEO, Santa Rosa, CA
	Brenda Shafer, with EMR-Syndrome, CA
	Gene Wagenbreth, Topanga, CA
	Margaret Holt Baird, Esq., with EMR-Syndrome, San Diego, CA
	Raymond Michael LeVesque, RayGuardProtect.com, National Health Federation Board Member, Clear Lake Riviera, CA
CO - Colorado	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, CO
	La Plata for Safe Technology, Ingrid Iverson, with EMR-Syndrome, La Plata County, CO
	Longmont for Safe Technology, Doe Kelly, Co-Founder, with EMR-Syndrome, Longmont, CO
	Deborah Shisler, with EMR-Syndome, CO
	Virginia Farver, Fort Collins, CO
CT - Connecticut	Connecticut for Responsible Technology, Private Membership Association (PMA), Paska Nayden, Co-Founder & Administrator, with EMR-Syndrome, CT
FL - Florida	Florida Coalition for Safe Technology, St. Pete's Beach, FL
	Lauren Mones, St. Pete's Beach, FL
	KellyLee McFrederick, St. Pete's Beach, FL
	Kay Fitt, Palm Harbor, FL; Susan Lee, Miami, FL
	Shirley Denton Jackson, with EMR-Syndrome, unexpected early retirement from School District of Palm Beach County, FL - Research Project Manager and Safe Schools Coordinator - due to EMR-Syndrome, North Palm Beach, FL
IL - Illinois	Safer Cell Phone and Wi-Fi Project, Marne Glaser, Chicago, IL

LA - Louisiana	Southern EMF Radiation Solutions, Shari Champagne, with EMR-Syndrome, Houme, LA
MA – Massachusetts	Massachusetts for Safe Technology, Cecelia Doucette, Director, Ashland, MA
	Pittsfield Cell Tower Injured & Concerned Citizens (injured with EMR-Syndrome), Pittsfield, MA
	Safer Siting 01240, Lenox, MA
	Safe Tech International, Patricia Burke, journalist, with EMR-Syndrome, Millis, MA
	Sustainable Upton, Laurie Wodin, Co-Administrator, with EMR-Syndrome, Upton, MA
	Last Tree Laws (.com), Kirstin Beatty, with EMR-Syndrome, Director, Holyoke, MA
	The Leto Foundation, Westborough, MA
	Alison McDonough, with EMR-Syndrome, Canton, MA
	Janet FitzGerald, M.S., CCC-SLP Rowley, MA, member of Massachusetts for Safe Technology
	Anna Nelson, with EMR-Syndrome, Pittsfield, MA
Tais Howard, Lynn, MA	
MD - Maryland	Safe Tech International, Kate Kheel, Taneytown, MD
	Katherine Katzin, Takoma Park, MD
ME - Maine	Global Union Against Radiation Deployment from Space, Bowdoinham, ME
	Maine Coalition to Stop Smart Meters, Richmond, ME
	Friends of Merrymeeting Bay, Richmond, ME
	Ed Friedman, Richmond, ME
	Janet Drew, retired Registered Nurse, York, ME
	Jen Goddard, Board Certified Doctor of Natural Health, Thriving Proof Holistic Health Practice, and 2025 United States of America Mrs. Maine Pageant, Brewer, ME
MN - Minnesota	DAMS, Inc., 501(c)(3), educates public on dental health issues, St. Paul, MN
	Safe Tech Minnesota, Leo Cashman, Petra Brokken, St. Paul, MN
MO - Missouri	Loraine Uebele, FACHE, Kansas City, MO
	Marty Freyer, Mexico, MO
	David B. Klug, Kansas City, MO

	Bethany Klug, Supporter and Advocate for EMF Affected, Kansas City, MO
NC - North Carolina	Sharon Behn, Arden, NC Susan Marlan, Asheville, NC Nicole Stallings, with EMR-Syndrome, Black Mountain, NC
NE - Nebraska	Tammy Lee, with EMR-Syndrome, Lincoln, NE Linda Becker, Lincoln, NE
NH - New Hampshire	New Hampshire for Safe Technology, Deb Hodgdon with EMR-Syndrome, Stratham, NH Kent Chamberlin, PhD, former member of NH Commission to Study Evt'l and Health Effects of Evolving 5G Technology; Prof. & Chair Emeritus, Fullbright Distinguished Chair, Univ of NH, Coll. of Eng and Phys Sci, Dept. Of Electrical and Computer Eng
NJ - New Jersey	Lisa Allen, Plainfield, NJ Diane Grossi with EMR-Syndrome, East Hanover, NJ
NM - New Mexico	Lori Bagley, concerned individual with EMR-Syndrome, Albuquerque, NM
NY - New York	New Yorkers 4 Wired Tech, New York, NY New York City Alliance for Safe Technology, New York, NY Safe Tech Westchester, Ruth F. Moss, Westchester, NY EMR-Syndrome Alliance, Westchester, NY New York Safe Utility Meter Association (NYSUMA), Woodstock, NY Amy Harlib, Concerned Citizen, New York, NY Fred P. Sinclair, Jr., Alfred, NY Kate Reese Hurd with EMR-Syndrome, Philmont, NY Gabriela Munoz with EMR-Syndrome, Carmel, NY Stephanie Stewart, LaGrangeville, NY Virginia Caswell with EMR-Syndrome, NYC (Stuyvesant Town), NY Barbara Stemke, New Paltz, Ulster County, NY Toby Stover, High Falls, NY
OH - Ohio	Craig McDowell, veteran, Rocky River, OH

	<p>Erin McDowell, Registered Nurse, with EMR-Syndrome, Rocky River, OH, Southwestern Ohio for Responsible Technology (SWORT)</p> <p>Jennifer Manzler, Certified Health & Wellness Coach, Cincinnati, OH, SWORT</p> <p>Sean Polacik, Automation Control Systems Technician, OH</p> <p>Cristina Shonk, Cincinnati, OH</p>
OR - Oregon	<p>Oregon for Safer Technology, Ashland, OR</p> <p>Kelly Marcotulli with EMR-Syndrome, Ashland, OR</p> <p>The Soft Lights Foundation, Mark Baker, President, Beaverton, OR</p>
PA - Pennsylvania	<p>Pennsylvanians for Safe Technology, Donna DeSanto Ott PT DPT MS FMCHC, Founder & President, PA</p> <p>Southwest Pennsylvania for Safe Technology, Mount Pleasant, PA, Susan Jennings, MPA, BA, Founder (son has EMR-Syndrome)</p> <p>Jan Kiefer, Scottdale, PA</p>
RI - Rhode Island	<p>Rhode Island 4 Safe Tech, Sheila Resseger, M.A., Co-Founder, Cranston, RI</p>
TN - Tennessee	<p>Janet Taché, Hohenwald, TN</p>
UT - Utah	<p>Rosemarie Russell, member of The Women's State Legislative Council of Utah, Hurricane, UT</p>
VA - Virginia	<p>Virginians for Safe Technology, Jenny DeMarco, Communications Director, and Mary Bauer, retired radio frequency engineer, Fredericksburg, VA</p> <p>Charles Frohman, M.Ed, HIA, lobbyist, National Health Federation, Williamsburg, VA</p> <p>Linda M. Cifelli, retired Registered Nurse, Williamsburg, VA</p> <p>Grace Hilbert, with EMR-Syndrome, Annandale, VA</p>
VT - Vermont	<p>Martine Victor, Manchester, VT</p>
WA – Washington	<p>Citizen League Encouraging Awareness of Radiation, C.L.E.A.R., Mark Wahl Director, Langley, WA</p>
WI - Wisconsin	<p>Katrine Colton, with EMR-Syndrome, Sheboygan, WI</p> <p>Tracey Seymour, with EMR-Syndrome, Westfield, WI</p> <p>Carol Seibert, with EMR-Syndrome, Trevor, WI</p>

Europe	Filers
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Sweden	Eva Christina Andersson, E.U., Sweden
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Attachment B

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

July 1, 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.”¹⁸

~ 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 hazardous to human health**.¹⁹ 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.²⁰
 - b) Abruptly after these findings, the EPA was defunded from doing any further research on the biological effects of wireless radiation.²¹

¹⁸ <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.

¹⁹ 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.

²⁰ Ibid.

²¹ Overpowered, What Science Tells Us About the Dangers of Cell Phones and Other WiFi-Age Devices, Martin Blank, PhD, 2014 at 110-112.

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.²²
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.²³
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.²⁴
5. **RF Radiation is a Pollutant.** The telecom industry characterizes RF radiation as a pollutant in their device protection plans and disclaim insurance liability.²⁵
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.²⁶
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."²⁷

²² T-Mobile 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>.

²³ 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/Orfwys743dgeqpifwu3ua/Manufacturer-own-patents-to-cut-radiation-RCR-Wireless-News.pdf?rlkey=e5hm46nyp9an6ugu4y005ldm3&st=xr7ocreh&dl=0>.

²⁴ 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>.

²⁵ 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>.

²⁶ <https://ehtrust.org/key-issues/electromagnetic-field-insurance-policy-exclusions/>.

²⁷ <https://ehtrust.org/health-effects-of-5g-wireless-technology-confirmed-at-us-senate-hearing-after-senator-blumenthal-questions-industry/>; see also, <https://midsafetech.org/2019/02/13/no-research-on-5g-safety-senator-blumenthal-question-answered/>.

8. **“Why Tech Leaders Don't Let Their Kids Use Tech.”**²⁸ 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 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.”²⁹

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).³⁰ NTP found malignant heart schwannomas and malignant brain gliomas.³¹ 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.”³²
 - 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.”³³ “Overall, the NTP findings demonstrate the potential for RFR **to cause cancer in humans.**”³⁴ [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.³⁵

²⁸ “Why Tech Leaders Don't Let Their Kids Use Tech,” <https://kidzu.co/health-wellbeing/why-tech-leaders-dont-let-their-kids-use-tech/>.

²⁹ Ibid.

³⁰ 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=vq1i363i74umg9ybydrhmn5d&st=q9l49h88&dl=0> ; see also, <https://ehtrust.org/former-niehs-director-dr-linda-birnbaum-interviewed-about-cell-phone-radiation/>.

³¹ <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>.

³² 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.

³³ 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.

³⁴ Ibid, 11.

³⁵ 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).

The FCC averages exposure levels over 30 minutes,³⁶ 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.³⁷

- 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.³⁸ 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.³⁹ The FCC has acknowledged a "worst-case" scenario of transmitters "operating simultaneously and continuously" at the MPEL with an individual "in the main transmitting

³⁶ 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)).

³⁷ 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 μ s 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>.

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."

³⁸ <https://media.cadc.uscourts.gov/opinions/docs/2021/08/20-1025-1910111.pdf>

³⁹ 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>.

beam and within a few feet of the antenna for several minutes or longer.”⁴⁰ While the FCC dismisses this scenario as “extremely remote,” it is allowing 4G and 5G cell towers to be installed⁴¹ just feet from a home, business or school where individuals and children are in the main transmitting beam for many hours a day.

- d) The FCC’s MPEL is based on IEEE (Institute of Electrical and Electronic Engineers) guidelines⁴² which “have not been changed since 1991 and do not consider children.”⁴³ 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.”⁴⁴ A Specific Absorption Rate (SAR) – rate of absorption of electromagnetic radiation -- is then calculated based on thermal effects (heating tissue) of that model head.⁴⁵ 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. ⁴⁶

3. **A U.S. Naval Medical Academy Research** report from 1971 by Dr. Zory Glaser⁴⁷ linked 23 chronic diseases to RF radiation based on over 2300 studies.⁴⁸ 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.⁴⁹ 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.⁵⁰ In 1976, Dr. Glaser updated the total bibliography to 3700 reports relating to the biological effects of RF radiation.⁵¹

⁴⁰ 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.>

⁴¹ *In re Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Inv.*, 33 F.C.C.R. 9088, 9104-05 (2018).

⁴² 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.>

⁴³ *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://touro scholar.touro.edu/cgi/viewcontent.cgi?article=1218&context=sjlcas>.

⁴⁴ *Ibid* at 3.

⁴⁵ *Ibid*.

⁴⁶ <https://ehtrust.org/press-release-concealed-fcc-cell-phone-radiation-tests-show-human-exposure-limits-were-exceeded/>.

⁴⁷ About Dr. Zory Glaser, <https://zoryglaser.com/>.

⁴⁸ https://www.magdahavas.com/wp-content/uploads/2010/06/Navy_Radiowave_Brief.pdf.

⁴⁹ 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.

⁵⁰ *Ibid* at 3.

⁵¹ <https://ehtrust.org/wp-content/uploads/Naval-MRI-Glaser-Report-1976.pdf>.

4. **A U.S. Air Force report** from 1994⁵² 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.⁵³
 - a) The study coins the term “**radiowave disease**” to describe these effects.⁵⁴ 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.⁵⁵
 - 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.”⁵⁶
 - d) The degree of adverse effects **increased with more exposure**,⁵⁷ 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.⁵⁸ 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.

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,⁵⁹ 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.⁶⁰ 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

⁵² *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>.

⁵³ <https://mdsafetech.org/wp-content/uploads/2019/02/biological-effects-of-millimeter-wavelengths.-zalyubovskaya-declassif-by-cia-1977-biol-eff-mm-waves.pdf>.

⁵⁴ Ibid at 57.

⁵⁵ Ibid at 60.

⁵⁶ Ibid at 59.

⁵⁷ Ibid at 59.

⁵⁸ Ibid at 58.

⁵⁹ <https://ehtrust.org/timeline-of-development-of-safety-limits-for-wireless-radiation-in-us/>.

⁶⁰ <https://www.sciencedirect.com/science/article/pii/S0160412025002338>.

2025.⁶¹ 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 2011⁶² (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."⁶³
- 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,"⁶⁴ 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 radiation.⁶⁵ 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).⁶⁶ 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."⁶⁷ 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,⁶⁸ however, the study has been found to be severely flawed with no scientifically valid assessment,⁶⁹ and its conclusion contradicted scientific evidence

⁶¹ See, e.g., <https://icbe-emf.org/who-funded-study-reports-high-certainty-of-the-evidence-linking-cell-phone-radiation-to-cancer-in-animals/>.

⁶² https://www.iarc.who.int/wp-content/uploads/2018/07/pr208_E.pdf.

⁶³ 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}.

⁶⁴ 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}.

⁶⁵ <https://www.who.int/news-room/questions-and-answers/item/radiation-5g-mobile-networks-and-health>.

⁶⁶ 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/ijco.2018.4606>

⁶⁷ 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.

⁶⁸ 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.

⁶⁹ 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*

and was drawn from data showing hazards.⁷⁰ Researchers have called for a retraction of the study.⁷¹

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.⁷² Researchers have called for a retraction of that study, as well.⁷³

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.⁷⁴

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]⁷⁵ and genotoxicity [associated with increased DNA damage]⁷⁶. Therefore, the IARC Category should be upgraded from Group 2B to Group 1, a human carcinogen⁷⁷.”⁷⁸ [Some internal footnotes omitted]

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>)

⁷⁰ “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?rlk=ey=o77i19den485rdo2k4ktdzhgi&st=842p0rbv&dl=0.

⁷¹ 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>.

⁷² 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>.

⁷³ Ibid.

⁷⁴ <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}.

⁷⁵ 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.

⁷⁶ 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.

⁷⁷ 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.

⁷⁸ 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.

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.”⁷⁹
 - 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 . . . ”⁸⁰
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.”⁸¹
5. **New Hampshire Commission** studied the biological effects of wireless radiation and issued a report Nov. 2020⁸² 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. Chamberlain’s letter explaining their findings).
6. **Thousands of scientific and medical studies** show neurological disorders; increased risk of cancer⁸³ 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.⁸⁴
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 arrhythmia, burning skin, trouble

⁷⁹ EnvironHealth 21, 92 (2022). <https://doi.org/10.1186/s12940-022-00900-9>.

⁸⁰ Ibid.

⁸¹ <https://pmc.ncbi.nlm.nih.gov/articles/PMC8562392/> Dr. Dimitris J. Panagopoulos is an EMF-biophysicist at the Choremion Research Laboratory, Medical School, University of Athens, Greece, <https://www.researchgate.net/profile/Dimitris-Panagopoulos-3>.

⁸² <http://www.gencourt.state.nh.us/statstudcomm/committees/1474/reports/5G%20final%20report.pdf>.

⁸³ *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>.

⁸⁴ 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/>.

concentrating.⁸⁵ The significance of these reports is that non-ionizing radiation⁸⁶ from 5G — well below levels allowed by authorities — can cause health problems in individuals who had no prior history of electromagnetic sensitivity.⁸⁷ 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.”⁸⁸

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.⁸⁹ Based on a population of 332.4 million people in the U.S.,⁹⁰ 120 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,⁹¹ and recommends no more than 0.1 microwatts per centimeter squared for human exposure⁹² (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.”⁹³
10. **Children absorb more RF radiation and are at greater risk than adults.**⁹⁴

⁸⁵ <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-v10-1926.pdf?fbclid=IwAR2J-mE3XeBxqaXPQdFxl9Q23bMCer9vgUBHnCVjXBrGbv-w7YdRUDwF0>; see also, “The microwave syndrome or electrohypersensitivity: historical background,” <https://pubmed.ncbi.nlm.nih.gov/26556835/>.

⁸⁶ <https://childrenshealthdefense.org/emr/emf-key-terms-descriptions/>.

⁸⁷ <https://childrenshealthdefense.org/emr/emf-wireless-health-impacts/>.

⁸⁸ <https://www.stralskyddsstiftelsen.se/two-studies-show-that-5g-caused-the-microwave-syndrome-in-healthy-persons/>.

⁸⁹ “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>.

⁹⁰ <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>.

⁹¹ *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/>.

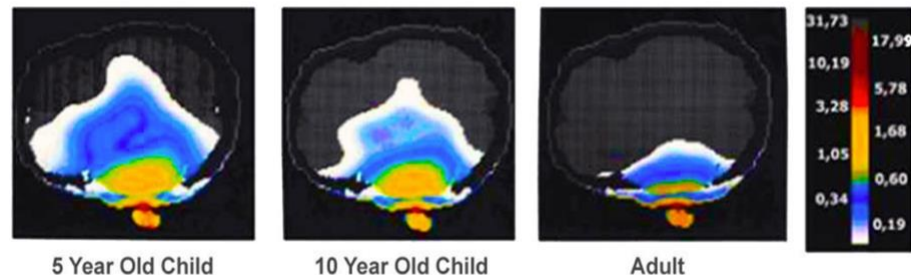
⁹² *Key Scientific Evidence and Public Health Policy Recommendations* 2007, at 22-23, https://bioinitiative.org/wp-content/uploads/pdfs/sec24_2007_Key_Scientific_Studies.pdf.

⁹³ *Key Scientific Evidence and Public Health Policy Recommendations*, Supplement 2012, at 4, 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/>.

⁹⁴ “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-fags/>.

a) **From cell phones:**⁹⁵

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.⁹⁶
- c) **Greater risk for fetuses:** risk of “degeneration of the protective myelin sheath that surrounds brain neurons.”⁹⁷
- d) **School-age children:** risk of “[d]igital dementia.”⁹⁸
- e) **Childhood leukemia,** increased risk.⁹⁹
- f) **Potential dangers of cell towers near schools.**¹⁰⁰
 - 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.¹⁰¹

⁹⁵ 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/>.

⁹⁶ *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/>.

⁹⁷ *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>.

⁹⁸ *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>.

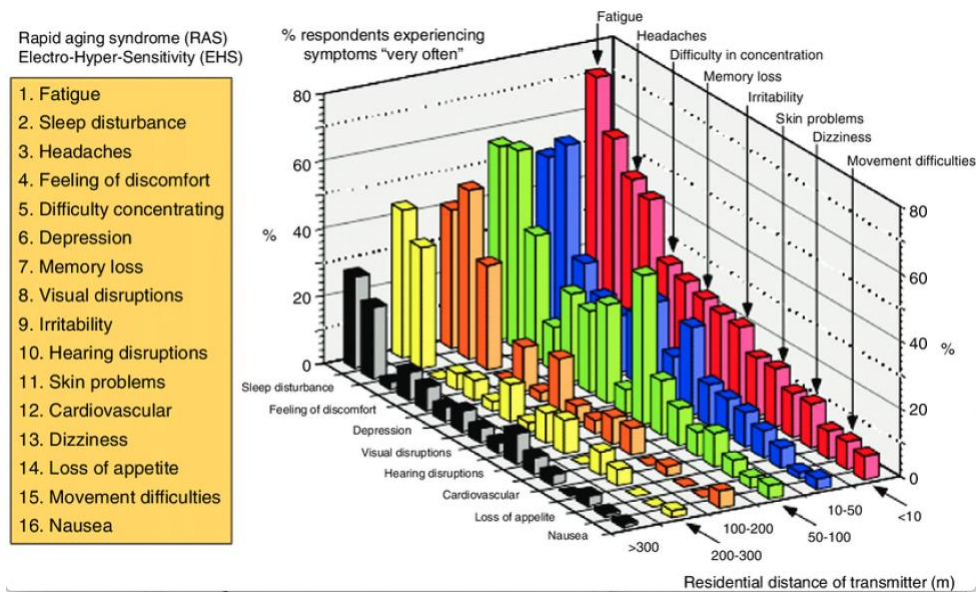
⁹⁹ *Key Scientific Evidence and Public Health Policy Recommendations*, 2007, at 19, David O. Carpenter, MD, Director, Institute for Health and the Environment University at Albany, Cindy Sage, MA, Sage Associates, https://bioinitiative.org/wp-content/uploads/pdfs/sec24_2007_Key_Scientific_Studies.pdf.

¹⁰⁰ Dr. Magda Havas: WiFi in Schools is Safe. True or False? <https://www.youtube.com/watch?v=6v75sKAUFdc>.

¹⁰¹ *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,

- 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.¹⁰²
- 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.¹⁰³

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.¹⁰⁴



Symptoms experienced by people near cellular phone base stations; RF radiation affects the blood, heart and autonomic nervous system.¹⁰⁵ 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,

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.

¹⁰² 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/>.

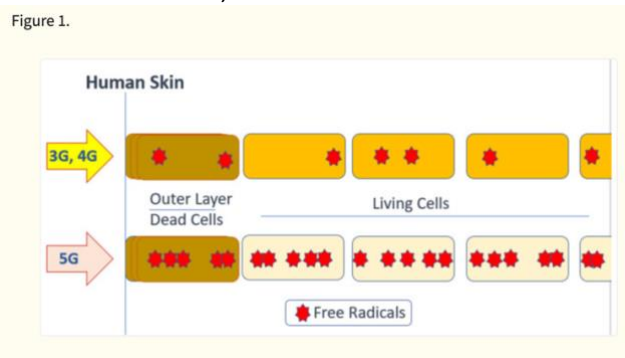
¹⁰³ Child With Heart Problems From Wireless: 5G Health Risks California SB 649 Hearing, https://www.youtube.com/watch?v=OgNLR9fQOX4&list=PLT6DbkXhTGoDakSqp1i_7milpwGx4xMFq.

¹⁰⁴ *Cell Tower Health Effects*, Physicians for Safe Technology, <https://mdsafetech.org/cell-tower-health-effects/>.

¹⁰⁵ Dr. Magda Havas, https://www.researchgate.net/figure/Symptoms-experienced-by-people-near-cellular-phone-base-stations-based-on-the-work-of_fig2_258313941.

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.**”¹⁰⁶

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.¹⁰⁷ 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.”¹⁰⁸ 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.¹⁰⁹



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.¹¹⁰

¹⁰⁶ 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>.

¹⁰⁷ 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>.

¹⁰⁸ 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>.

¹⁰⁹ 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.

¹¹⁰ “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

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.¹¹¹ Other scientists have joined in consensus statements.¹¹²
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.¹¹³
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.¹¹⁴
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 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.¹¹⁵
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.¹¹⁶ 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.”¹¹⁷ 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.¹¹⁸ One of the children

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/>.

¹¹¹ <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/>.

¹¹² <https://phiremedical.org/wp-content/uploads/2020/11/2020-Non-Ionising-Radiation-Consensus-Statement.pdf>.

¹¹³ <https://www.iaff.org/cell-tower-radiation/>.

¹¹⁴ 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/>.

¹¹⁵ <https://childrenshealthdefense.org/defender/marcia-haller-cell-tower-rf-radiation-sickness/>.

¹¹⁶ <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.

¹¹⁷ <https://ehtrust.org/family-injured-by-cell-tower-radiation-in-pittsfield-massachusetts/>.

¹¹⁸ See beginning of video at https://www.youtube.com/watch?v=-9TMTexPb_0&t=128s.

who contracted brain cancer (glioblastoma) when he was 10 years died in Aug 2024.¹¹⁹ After the 4th student was diagnosed with cancer, the tower was removed.¹²⁰ Since the tower was removed, it was reported that there were no more instances of cancer at the school.¹²¹

- 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.¹²²

¹¹⁹ 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>.

¹²⁰ <https://mfsafetech.org/2019/03/25/cell-tower-to-be-removed-after-4th-ripon-student-diagnosed-with-cancer/>.

¹²¹ See beginning of video at https://www.youtube.com/watch?v=-9TMTexPb_0&t=128s.

¹²² <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



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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 Verizon 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