

1. Comments are submitted anonymously under the pseudonym L. Anonymous

2. These comments are submitted from the following perspectives: I completed an independent study course at a college studying biological effects of radiofrequency radiation ("RFR"), submitting a written report upon reviewing many scientific articles that had varied conclusions. I learned math formulas for calculating RFR far-field power density exposures from wi-fi, cell towers, smart meters, etc. Other courses such as toxicology complimented these areas of study. I now use a RFR detection meter. I also identify as an individual consumer, who avoids buying items emitting RFR, and now as a patient.

3. (a) (i) Indoor sources of exposure to RFR: Multiple sources include other people's wi-fi and cell phones that emit radiation even when the cell phone holder is not using the phone. Many cell phones act as transmitters for other cell phones. Using wired landline phones are preferable to lower RFR. Indoor exposure may also be cumulatively affected by outdoor RFR levels. I don't use wi-fi, cell phones or wearable devices.

In other people's homes, satellite telecommunication equipment in lieu of landlines and the "internet of things" measurably increases RFR.

Low frequency electromagnetic fields ("ELF's") can emit from power lines or appliances and smart.

(ii) Outdoor sources of RFR may include cell towers, wireless antennas, smart meters, radio stations, radar, etc.

(iii) Newer cars emit RFR from radar and blue tooth.

3. (b). I use a calibrated meter to measure RFR, with a measurement scale to about 6 volts per meter for the following. It detects frequencies from 200 MHz up to 8Ghz, with informing the specific frequencies it detects. I also use a gauss meter for ELF detection.

i. RFR's: Inside my living space, RFR background measurements are at least 1 volt/meter up to 3+ volts/meter or more depending on where one is standing, likely emitting from other peoples' wi-fi or cell phones. I don't use these devices at home. This may understate RFR as my meter does not detect 5G frequencies in the millimeter wave range. (5G NR also uses frequencies up to 7.125 GHz that my meter does detect).

*I estimate that outdoor radiation contributes about .1 volts/meter to the indoor level.

One (1) volt/meter converts to about .265 microwatts/cm² (μW/cm²). This is above the precautionary limit of .1 μW/cm² recommended by the Bioinitiative Report in 2007, which now recommends even lower levels (Bioinitiative Working Group Report (2012) Sage, Cindy; Carpenter, David, Editors (updated 2022).

ii. ELF magnetic field levels are negligible in current living space.

iii. Libraries tend to have higher RFR levels due to multiple users of wi-fi or bluetooth. Many measure over the maximum levels read by my meter, over 6 volts/meter. HHS should make libraries aware of this issue. They should designate spaces with lower RFR and offer wired internet in these areas.

iv. RFR inside many newer cars reaches the maximum my meter reads (over 9.55 microwatts/cm² (μW/cm²)) from radar or Bluetooth.

v. Outdoor RFR levels are increasing (*Bandara, P; Carpenter, D.O. Planetary electromagnetic pollution: it is time to assess its impact. www.thelancet.com/planetary-health Vol 2 December 2018*). **The authors assert natural background levels of RFR in 1Ghz spectrum have increased 10 to the power of 18.**

3(c)-(d) i. After about a few hours or more in living space at RFR levels stated above, I experience increased symptoms consistent with “radiofrequency sickness”, as described in the study by Balmori (2022) cited in 3(g) below. Due to this being PHI, no specific symptoms are given here.

*Steps are taken to limit RFR exposure by regularly leaving my living space to lower RFR environments and avoiding personal use of devices emitting RFR.

*Lowering exposure correlates with decreased symptoms and vice versa.

* Adverse effects increased as involuntary exposure levels went up over the years.

ii. In cars with radar/bluetooth enabled, some symptoms of RF sickness described by the Balmori (2022) study (see sec. 3(g)) occur in me. More cars should provide a way to disable these features.

iii. Comment about ELF's: Years ago I developed balance and walking problems upon moving into a home. The home had a 30 milligauss reading of ELF magnetic field due to wiring issues. The walking/balance problems improved after I moved out.

3(e) This is PHI.

3(f) Some adverse effects decrease by going to a low RFR environment, despite inconvenience of doing so, for several hours or longer periods.

3(g) A number of studies indicate adverse effects at or below the levels discussed above, including:

A study reported fatigue, headaches, sleeping problems occurred from exposure levels of 0.01 - 0.11 $\mu\text{W}/\text{cm}^2$ from cell phone base stations. (Navarro, et al., 2003. The Microwave Syndrome: a preliminary study in Spain. *Electromag Biol Med* 122:161-169).

Exposure levels of .005 to 0.04 $\mu\text{W}/\text{cm}^2$ from short term cell phone use reportedly led to increased concentration difficulties and headaches in adults (Thomas S, Kühnlein A, et al, 2008. Personal exposure to mobile phone frequencies and well-being in adults: a cross-sectional study based on dosimetry. *Bioelectromagnetics* 29:463-470).

Balmori (2022) sought a complete review of existing literature (n=38) on effects of base station antennas on people, reporting 73.6% showed effects for radiofrequency sickness, characterized by concentration problems, sleep disturbance, irritability, depression, memory loss, dizziness, fatigue, appetite loss, dizziness, etc. Reportedly, 76.9% of studies showed an effect for cancer. (Balmori, A., Evidence for a health risk by RF on humans living around mobile phone base stations: From radiofrequency sickness to cancer, *Environmental Research*, 2022; <https://doi.org/10.1016/j.envres.2022.11385>)1

How high are power density levels emitting from cell towers? Sage (2000) measured power density levels from .01 to 3 $\mu\text{W}/\text{cm}^2$ at a distance of 100-300 feet away from towers in U.S. (Sage C. 2000. International Conference on Cell Tower Siting, Salzburg, Austria June 7-8, 2000).

At levels below this, decreased reproductive function in mice occurred starting at only .0016 $\mu\text{W}/\text{cm}^2$ (.000168-.001053 mW/cm²). Magras, I.N. and Xenos, T.D., 1997, RF radiation-induced changes in the prenatal development of mice. *Bioelectromagnetics* 18(6):455-461.

A change in immunological functions reportedly occurred in mice after exposure to RFR at .001 milliwatts/cm². (Fesenko, E.E., Makar, V.R. et al, 1999. Microwaves and cellular immunity I. Effect of whole body microwave irradiation on tumor necrosis factor production in mouse cells *Bioelectrochem Bioenergy* 49(1):29-35.

4(m). Telecom industry conflicts of interest in studies reportedly impact study outcome.

This should be avoided in future studies or surveillance.

One study indicates RFR studies funded exclusively by industry reported the largest number of outcomes, but were least likely to report a statistically significant result. The reporting journals for industry-funded studies did not divulge the conflicts of interest. (Huss, et al., Source of Funding and Results of Studies of Health Effects of Mobile Phone Use: Systematic Review of Experimental Studies, *Environmental Health Perspectives*, 115:1, January 2007).

The authors of studies can also have conflicts of interest. A published review by Dr. Hardell describes conflicts of interest in the World Health Organization's core group that drafted World Health Organization's Monograph on RFR. (Hardell, Lennart. World Health Organization, radiofrequency radiation and health..., *Int. J. of Oncology* 51: 405-413, 2017). Dr. Hardell reports that "the exposure guideline used by many agencies was established in 1998 by the International Commission on Non-Ionizing Radiation Protection (ICNIRP)," which bases its RFR exposure guidelines on short term thermal effects only (the heating of tissues by radiation), excluding non-thermal effects.

The ethical Board of the Karolinska Institute in Stockholm held in 2008 that membership in the ICNIRP is a potential conflict of interest that must be declared. (Hardell, 2017). WHO's Monograph did not list these conflicts of interest.

A large body of published studies indicate detrimental effects at non-thermal levels. (Hardell, 2017). FCC endorses exposure limits for RFR that include many recommendations from the ICNIRP and the NCRP (National Council on Radiation Protection and Management). Importantly, FCC limits do not take non-thermal effects into account and were based on short term exposures. (International Commission on the Biological Effects of Electromagnetic Fields (ICBE-EMF). Scientific evidence invalidates health assumptions underlying the FCC and ICNIRP exposure limit determinations...*Environmental Health* (2022) 21:92).

Dr. Hardell's Comment in *Oncology Letters* in 2020 describes conflicts of interest by the Chair of the Swiss advisory group on EMF's called BERENIS. The letter reports the chair was on the board of the telecom-funded Swiss FSM organization and is a member of the ICNIRP, which does not represent the opinion of the majority of the scientific community involved in research on health effects from EMF. (Hardell, Lennart & Carlberg, Michael. Health risks from radiofrequency radiation, ...should be assessed by experts with no conflicts of interest. *Oncology Letters* 20: 15, 2020 (June 19)

This is significant because a number of scientific studies list author(s) that correspond by name to those discussed in Dr. Hardell's letter and paper on WHO discussed above.

President Trump's Executive Order 14212 includes the laudable goals in Sec. 5(a) to:

(ix) restore the integrity of science, including by eliminating undue industry influence, releasing findings and underlying data to the maximum extent permitted under applicable law, and increasing methodological rigor; and

(x) establish a framework for transparency and ethics review in industry-funded projects.

To accomplish these goals, conflicts of interest in studies must be carefully guarded against, including by ensuring study authors do not have conflicts.

5(n). Federal health agencies should reform recommended RFR limits to those based on non-thermal effects found in a multitude of studies.

These reforms should utilize the precautionary far-field RFR power density levels set by the Bioinitiative Working Group Report (2012, updated 2022), of at least .1 $\mu\text{W}/\text{cm}^2$ and preferably below.

Recommendations of the International Commission on the Biological Effects of EMF's (ICBE-EMF) should also be taken into account. For example, they propose lowering the FCC near field guidelines, ie the specific absorption rate (SAR), for the general public by 24-fold to 3.3mW/kg.

(Melnick, R. , and Moskowitz, J. Exposure limits to radiofrequency EMF do not account for cancer risk or reproductive toxicity assessed from data in experimental animals. *Environmental Health* (2026) 25:42)

Near-field SAR is a measurement of the level of energy absorbed, such as when cell phone is pressed to the head.

*This should include review of over 10,000 pages of studies filed by Petitioners in US Court of Appeal (DC Circuit), Case no No. 20-1025 Environmental Health Trust, Et Al v FCC., Consolidated with Case no. 20-1138.

5(n)i. Repeal Section 704(B)(iv) of the The 1996 Telecommunications Act please, which gave the telecom industry an unfair advantage over citizens and local governments by taking away their rights to block placement of cell towers for environmental reasons (Section 704(B)(iv). This Section is largely responsible for the massive buildout of wireless. The telecom industry has tried to extend the meaning of “environmental effects” to health issues. Section 704 must be changed so that local democratic control and citizen input is restored.

5(n)ii. Landlines must be protected as an alternative to cell phones. Telecom is using an FCC Order to attempt to end landline service. FCC should repeal Report and Order adopted March 26, 2026 (on WC Dockets 25-208 and 25-209) that allows telecom companies to appeal state law when there is a conflict between state law and federal authorization to end landlines. (Order: “Modernizing Network and Communication Services”). Landlines are also less hackable by foreign actors.

5 (n)iii. The US Access Board has an excellent “Recommendation for Accommodations” for people with chemical and/or electromagnetic sensitivity. The Access Board or HHS should issue additional accommodation recommendations for RFR emissions, including wi-fi.

5(n)iv. Regulations should require new cars to offer methods to turn off radar and Bluetooth.

5(n)v. Wi-fi and cell phones should be banned from classrooms. At the very least, an HHS position statement should encourage schools to only offer wired internet in classrooms. See position statement in Recommendations for Best Practices for Safe Technology in Schools, Santa Clara County Medical Association Environmental Health Committee Feb 14, 2023.

5(n)vi. HHS should issue an extension to respond to these questions or request further input. This is an intensive Request for Information. Volunteers like myself need more time to respond fully.

5(n)vii. The MAHA report, laudable in other respects, is weak on RFR studies, given the large body of scientific studies indicating adverse biological effects at subthermal levels. The public deserves a more comprehensive report of existing studies, especially those without conflicts of interest from the wireless industry.

5(o) A large body of research exists indicating RFR exposure levels must be reduced. It's time to act. Any further research must be conducted without conflicts of interest. See earlier section 4 for more information about avoiding conflicts of interest.

6. A multitude of studies show health effects from subthermal levels of exposure below current exposure limits that rely on thermal levels. If effects are occurring at lower levels, then higher levels are clearly contraindicated. See many studies listed in Section 3(g) above, in addition to the following:

Note: U.S. power density guidelines are between .2-1 milliwatt/cm² depending on frequency. This is based upon thermal effects only, not effects occurring at subthermal levels.

At power density levels far below .53 $\mu\text{W}/\text{cm}^2$ at 350 meters from a tower (850Mhz) in Israel, the cancer rate in females increased 4 times the national average (Wolf, D. & Wolf, R. Cancer near a cell-phone transmitter station. *International Journal of Cancer Prevention* 1:2 , April 2004.

Abdel-Rassoul, et al (2007) reported neurobehavioral effects in residents nearby cell towers. (Abdel-Rassoul, G., et al. Neurobehavioral effects among inhabitants around mobile phone base stations. *Neurotoxicology*, March 2007).

Many studies by L.G. Salford indicate blood brain barrier leakage from subthermal RFR level. One article summarizes: "In a series of more than 1600 animals, we have proven that **subthermal** power densities from pulse modulated and continuous RF EMF's...have the ability to open the blood brain barrier so that the animals' albumin...passes out of the bloodstream into the brain tissues and accumulates in neurons and glial cells surrounding the capillaries." It also states: "The neuronal albumin uptake and other changes described would seem to indicate serious neuronal damage..." (Salford, LG, Grun, A.E, et al. Nerve Cell Damage in Mammalian Brain after Exposure to Microwaves from GSM Mobile Phones. *Environmental Health Perspectives*, Vol. 111:7, June 2003).

See also Nittby H, Brun A, Eberhardt J, Malmgren L, Persson BR, Salford LG.(2009) Increased blood-brain barrier permeability in mammalian brain 7 days after exposure to the radiation from a GSM-900 mobile phone. *Pathophysiology*. 16(2-3):103-12. doi: 10.1016/j.pathophys.2009.01.001.

See studies by Dr. Lennart Hardell including:

Hardell L, Carlberg M, et al: Long-term use of cellular phones and brain tumours – increased risk associated with use for > 10 years. *Occup Env Med* 2007;64:626-632. doi 10.1136/oem.2006.029751.

Hardell L, Carlberg M. Mobile phone and cordless phone use and the risk for glioma – Analysis of pooled case-control studies in Sweden, 1997-2003 and 2007-2009. *Pathophysiology*. 2015;22(1):1-13.

Nilsson M, Hardell L. Development of the microwave syndrome in two men shortly after installation of 5G on the roof above their office. *Ann Clin Case Rep*. 2023; 8. 2023;2378

* See other studies in Bioinitiative Working Group paper (2012, updated 2022).

*See studies summarized in paper Recommendations for Best Practices for Safe Technology in Schools, Santa Clara County Medical Association Environmental Health Committee Feb 14, 2023

A recent WHO-commissioned systematic review concluded "high certainty of evidence" (CoE) exists for increased incidence of schwannomas of the heart in experimental rats exposed to RF-EMF and "moderate to high" CoE for glial cell tumors. (Mevissen M, Ducray A, Ward, JM, Kopp-Schneider, McNamee JP, Wood WW, Rivero TM, Straif K. Effects of radiofrequency electromagnetic exposure on cancer in laboratory animal studies, a systematic review. *Environ Int*. 2025;199:109482).

*Melnick,et al (2026) discuss the National Toxicology Program's (NTP's) 2017 results that provided "clear evidence" of malignant heart schwannomas in male rats with exposures to CDMA or GSM-modulated RFR. Melnick, et al (2026) then describes how 2 studies in 2026 had inadequate designs that led to not replicating the results of NTP. (Melnick, R., Moskowitz, J. Conflicting views in experimental carcinogenesis: a commentary on design and methodological deficiencies in the follow-up validation studies on radiofrequency radiation *Environmental Health* (2026) 25:66 <https://doi.org/10.1186/s12940-026-01324-5>).

The NTP study cite is: Toxicology and carcinogenesis studies in Sprague Dawley (Hsd:Sprague Dawley SD) rats exposed to whole-body radio frequency radiation at a frequency (900 MHz) and modulations (GSM

and CDMA) used by cell phones. Natl Toxicol Program Tech Rep Ser. NTP-TR-595;2018.
<https://doi.org/10.22427/NTP-TR-595>

7. The U.S. should utilize the strategies that scientists in Australia or other places have used to measure population exposure to RFR. The Aussie study used personal exposimeters. (Zelege, B.M.: Brzozek, C. Personal Exposure to Radio Frequency Electromagnetic Fields among Australian Adults. *Int. J. Environ. Res. Public Health* 2018, 15, 2234; doi:10.3390/ijerph15102234).

*All frequency spectrums should be included in the measurements.

*Ambient radiation levels in cities should also be studied of all frequency spectrums.

8.

9. *HHS should release regular updates on RFR and ELF studies, those without conflicts of interest, to local government, consumers, libraries, healthcare providers, local government and housing agencies.

*HHS should provide information to the public about exposure recommendations from the ICBE-EMF and Bioinitiative Working Group Study, put in context of what devices, equipment, towers, and antennas currently emit. See above.

10. I urge occupational monitoring, environmental monitoring, adverse event reporting, and monitoring of disease or illness clusters.

11. Assessment or risk evaluation should differ for the following populations.

a. Children.

Children are more vulnerable to RFR exposures due to thinner skulls, high water content and unique physiology. (Position Statement, ICBE-EMF Safeguarding Children's Health in the Digital Age: Addressing Screen Time, Wireless Radiation, and Extremely Low Frequency Non-Ionizing Electromagnetic Field Exposures, Sept. 9, 2026)

Also, research indicates that RFR may affect brain development, delaying differentiation of cells. (Cakir, Bilal, et al., 2025, Radiofrequency regulates the BET-mediated pathways in radial glia differentiation in human cortical development. *Cell Reports* 44, 116238.

b. pregnant women (the rapidly dividing fetal cells are vulnerable)

d. those with implanted medical devices

e. workers with elevated exposures

f. people with preexisting medical conditions including electro hypersensitivity (EHS).

12. Regarding scientific evidence for setting RFR levels below Federal exposure limits, please see prior sections 3(g) and 6 above. In addition:

*Please review the over 10,000 pages of studies filed by Petitioners in US Court of Appeal (DC Circuit), Case No. 20-1025 Environmental Health Trust, ET AL., vs. FCC, Consolidated with Case no. 20-1138.

* See a multitude of studies by Henry Lai by going to Researchgate.com, including:

Lai H, Levitt BB. (2024) Cellular and molecular effects of non-ionizing electromagnetic fields. *Rev Environ Health* 39:519-529. doi: 10.1515/reveh-2023-0023

See Lai H, Levitt BB. (2025) Radiofrequency radiation-induced gene expression. *Rev Environ Health*. 40(4):695-719. doi: 10.1515/reveh-2025-0104.

13. The total cumulative load from all sources that you list must be taken into account for effects upon biology, whether or not the devices operate in the same frequency ranges.

(a). 5G can operate both in the millimeter wave range and in frequencies below 7.125 GHz.

- b) 6G operates in the range of sub-1 GHz to 3 THz. As long term exposure to these levels is not adequately tested, adopting 6G is the equivalent to experimenting on humans without their consent, a violation of the Nuremberg Code.
- c) Wi-fi operates at about 2.4, 5, and 6 GHz. It permeates many buildings, adding to the cumulative RFR burden.
- e) Internet of things for local networks operates at about 433, 868, 915 MHz and 2.4 GHz and uses mobile spectrums for wide area connectivity. The local networks increase RFR emissions in the most important place not to: people's homes.
- f) wearable technologies increases near field RFR because they regularly emit on the person wearing it.
- g) Smart homes and appliances increase RFR emissions homes that should have lower emissions to protect health. Warning labels should be required.
- h) Smart cities would greatly increase RFR exposure and should be strongly discouraged or banned.
- j). It seems counterproductive to encourage wireless medical devices from an RFR emissions standpoint.
- k) Smart meters operate at different frequencies depending on the meter. For example, the tech sheet for Focus AXR-SC meter indicated in 2012 an output power of 25dB, with a frequency of 902-928 Mhz. The 25 dBm number is derived from the peak pulses that are averaged over time even when meter is not emitting. The peak measurement is much higher and must be taken into account.

Dr. David Carpenter, founder University at Albany School of Public Health, states smart meters emit RF bursts an average of 9600 times per day, operating up to 2.4 Ghz. He asserts that if a smart meter is located on a common wall with a bedroom, for example, the RF exposure is similar to being within 200-600 feet from a cell tower. (Open letter of David Carpenter dated June 11, 2012. Smart Meters Correcting Gross Misinformation, published in La Maison du 21e siècle). Dr Carpenter discusses that Epidemiologist Sam Milham indicates that smart meters may also generate transient voltages AKA "dirty electricity".

14. See Sections 3(g) and sec. 6 above for some studies. Many more exist.

15. The following should be considered when evaluating RFR exposure:

- a. proximity to homes; b. cumulative neighborhood exposure; c. antenna density;
- d. small-cell deployment.

16. *Research should investigate further effects of RFR power density exposure levels below FCC limits, including wi-fi, on memory, cognition, sleep and reproductive function, with non-conflicted studies.

*Research effects upon animals exposed to 5G and 6G RFR before more massive buildouts.

* Investigate effects of RFR and transient voltages in electrical wiring from smart meters on health.

*Research further the relationship between RFR and autism.

See article: Gh. Mortazavi; M. Haghani, et al, 2016, Increased Release of Mercury from Dental Amalgam Fillings due to Maternal Exposure to Electromagnetic Fields as a Possible Mechanism for the High Rates of Autism in the Offspring: Introducing a Hypothesis. *J Biomed Phys Eng.* 2016 Mar; 6(1): 41-46.

17. FCC should monitor emissions from cell towers and small cells antennas more rigorously, or require independent monitoring separate from telecom companies, and report these values to HHS. There should be a process in place for a citizen to request monitoring of a specific tower.

*Most importantly, HHS should take over setting RFR exposure standards from the historically corporate-captured FCC (See Captured Agency: How the FCC(is dominated by the Industries it Presumably Regulates, 2015 by Norm Alster).

18. Please consider the review article, A Critical Analysis of the World Health Organization (WHO) Systematic Review 2024 on Radiofrequency Radiation Exposure and Cancer Risks by Lennart Hardell and Mona Nilsson, *J Cancer Sci Clin Ther Vol 9:1, 2025 DOI:10.26502/jcsct.5079261*.

This article calls to attention overlooked results showing increased risks for brain tumours in the most exposed groups to cell phones, the most exposed part of the head, and longest latency time from first exposure to tumour diagnosis, in the WHO study by Karipidis, K, Baaken, D, et al (2024) titled “The effect of exposure to radiofrequency fields on cancer risk in the general and working population: A systematic review of human observational studies.....”, *Environ Int 191 (2024): 108983*.

Hardell & Nilsson also point out that the conclusion in the Karipidis, et al study that “*moderate certainty evidence*” that transmitters and mobile phone base stations do not increase the risk of pediatric leukaemia is based on too few studies, along with other problems in study design.

Hardell & Nilsson reports another study (Moon, et al.), concluding that the available studies when analyzed together show that use of mobile phones increase the risk of brain tumours (Relationship between radiofrequency-electromagnetic radiation from cellular phones and brain tumor: Meta-analyses using various proxies for RF-EMR exposure assessment. *Environ Health 23 (2024): 82*). They further point out that the author Karipidic has conflicts of interest, whereas the Moon, et al authors do not divulge any.

*See also website of Dr. Magda Havas (Rory’s files) about military studies dating back decades on RFR effects.

B. The United States is at a crossroads. Do we go down the path of increasing RFR exposure levels, despite strong evidence of harm to adults and children, while evidence indicates increased rates of childhood diseases that are very likely related in part to RFR exposures? Do we keep exposure standards intact that disregard harm from non-thermal levels, despite competitive nations such as Russia not permitting these higher levels?

I urge that we have a much stronger country if we do not. Our strength as a Nation is in our people, and their ability to reason, act, procreate, and relate to each other.

Respectfully Submitted
L. Anonymous