

July 25, 2019

An Open Letter to Governor Baker; Attorney General Maura Healey; Senate President Karen Spilka; Speaker of the House Robert DeLeo; the entire Massachusetts Legislature; the state Public Health Department; state Education Departments; Senator Elizabeth Warren; Senator Ed Markey; and all Massachusetts federal House Representatives:

Despite receiving testimony critiquing wireless guidelines from numerous scientists, physician groups (including the American Academy of Pediatrics), and government agencies (including the Institute for Occupational Safety and Health and the city of Boston, Massachusetts), the FCC has failed to act on a 2013 directive to reassess wireless guidelines based on potential health risks.ⁱ

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In 2011 the International Agency for Research on Cancer (IARC), a branch of the World Health Organization, classified wireless frequencies as possibly carcinogenic (2B), in the same class as lead, chloroform, and 2,4-D, an herbicide.ⁱⁱⁱ Since then further evidence of risk has accrued, leading many of the original members of the review to request a second review for stronger categorization.^{iv} An independent advisory group to the IARC has seconded this motion for a “high priority” second review.^v

In 2015 the International EMF Scientist Appeal to the World Health Organization and the United Nations, warned of serious risks from “ubiquitous and increasing” wireless and electricity exposures.

Wireless research shows a pattern of harm including impaired mammal fertility. The risks to fertility alone from common wireless exposures alone are shocking: evidence of DNA damage and cancer, sperm damage,

miscarriage, structural malformation, birth defects, and other reproductive harm.

Neurological and other research is equally concerning.^{vi} Nature is also at risk, including soil fertility, plants, and bees.^{vii}

Professor Emeritus Dr. Martin Pall notes no rational society would allow such risks.^{viii}

Instead of showing restraint, the Federal Communications Commission (FCC) has promoted and buttressed wireless expansion. In 2016 the FCC began incentive auctions to intensify spectrum use, thus increasing exposure.^{ix} On September 26, 2018, the FCC preempted local zoning control for small cell towers. These 4/5G small cells are placed only a few hundred feet apart in front yards, drastically increasing exposure. Boston has more than 300.^x The FCC now proposes letting either renters or landlords install commercial antennas for off-site users without a permit, registration, or either renter or landlord permission, allowing exemption of oversight under the OTARD rule.^{xi} This is a perversion of the original intent to allow on-site user access to satellite TV, cutting right through any local zoning laws.

Brussels, Switzerland, France, Israel, Cyprus, and other municipalities or countries have taken actions to limit wireless exposures or halt the roll out of 5G. In contrast, Verizon claims millimeter-wave 5G will be in Boston by the end of 2019.^{xii} In Boston public housing, Starry began millimeter-wave 5G 39 GHz trials in 2016.

Higher millimeter-wave 5G frequencies are expected to require great power for transmission, nearing or exceeding FCC limits.^{xiii} Small cell tower research suggests power levels inside of 11 feet may exceed microwave oven guidelines and FCC limits, which are among the highest in the world.^{xiv} Even inside FCC limits, 5G and other wireless frequencies may exceed expected energy absorption and allow “permanent tissue damage after even short exposures.”^{xv xvi}

Low-power millimeter-wave 5G wireless technology could cause the perception of physical pain.^{xvii xviii}

The purpose of the FCC is to support interstate communications service, rather than promote the wireless industry or define intrastate service.^{xix} Communities have the right to prefer safer and more reliable wired communications over wireless. Communities have the right to demand comprehensive safety testing independent of vested interests regarding current and future exposures.

5G goes beyond the FCC's mandate for communications, which previous generations and wired service adequately provide. Instead 5G supports artificial intelligence, streaming video, precise tracking, and new markets for telecommunications companies.^{xx xxi xxii xxiii} In addition to extending health risks, mandates for 5G and wireless infrastructure have bypassed democratic processes to regulate security, reliability, sustainability, surveillance, and whether to even invest in or allow such infrastructure.

The foolishness and negligence of the FCC and telecommunications industry in promoting wireless rather than hard-wired connections must be brought to an end.

At the federal level, alternatives to wireless need promotion, and Senate bill 2012 and House Resolution 530, to roll back FCC rules, need consideration.

Legislation must be enacted to reduce and manage other harmful electromagnetic exposures. Any commission to perform such as task must include the voices of those harmed or sensitive to wireless, as well as long-standing, non-industry-affiliated experts.

Existing Massachusetts legislation to reduce exposures and warn residents must be passed, and strengthened as needed to ban small cell towers and other dangerous emissions, to hard wire the state, and to remove wireless from utility meters. Educational mandates requiring technology use must end to allow communities choice regarding electromagnetic exposures (S. 294). Doctors must also educate patients on electromagnetic health risks (S. 1271).

All wireless facilities in the state must be registered and registration information made freely available to the public (S. 1272).

Any economic considerations must be secondary to protecting our health and must, when addressed, benefit our fellow citizens rather than insulating telecommunications companies from liability. We expect tax money to be kept from under-girding these monopolies which have moved at all costs to manipulate markets, law, science, and state funds in their favor.^{xxiv}

Sincerely,

Kirstin Beatty, Co-Chair of Last Tree Laws, a Ballot Measure Entity

Dr. Carpenter, MD, Director, Institute for Health and the Environment,
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Dr. Magda Havas, Ph.D., Environmental and Resource Studies, Centre for
Health Studies, Trent University, Canada

Dr. Martin L. Pall, Professor Emeritus of Biochemistry and Basic Medical
Sciences, Washington State University

- i Moskowitz, Joel. (2016 Aug 3 Revised) Part I: Why we need stronger cell phone radiation regulations—key testimony submitted to the FCC [and citing testimony from FCC docket 13-84 on NOI #13-84, “Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Politics”]. Electromagnetic Radiation Safety. Available at <https://www.saferemr.com/2014/08/part-i-why-we-need-stronger-cell-phone.html>
- ii Per June 1, 2019, email with Dr. Ben-Shai: “[Guidelines] established in 1996 by the FCC and the ICNIRS were based on dosage studies relating to continuous wave MRI machines operating in the RF frequency range. These same regulations were essentially rubber stamped in 2009 as still applicable. . . . But cell phones and WiFi do not work as continuous wave transmitters. They send out time based pulses and this is actually far more disruptive.”
- iii IARC Monographs on the Identification of Carcinogenic Hazards to Humans, Volumes 1-123. International Agency for Research on Cancer. World Health Organization. Available at <https://monographs.iarc.fr/agents-classified-by-the-iarc/>
- iv Original members of the 2011 IARC review including Hardell, Miller, Leszczynski, then chairperson Samet, Melnick, Portier, and Belyaev have called publicly for a review. Portier is former director of the National Center for Environmental Health and the US Agency for Toxic Substances and Disease Registry at CDC. Melnick is former senior toxicologist to the National Institutes of Health: Melnick was heavily involved in the design and evaluation of a relevant National Toxicological Program study which found “clear evidence” of cancer risk.
- v Ed. Slesin, L. (2019 Apr 24) IARC urged to revisit RF risk: animal studies prompt calls to upgrade classification to “probably carcinogenic” or higher. Microwave News. Available at <https://microwavenews.com/short-takes-archive/iarc-urged-reassess-rf>
- vi Pall, Martin. (2018, May 7) 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. Available at Physicians for Safe Technology: <https://mdsafetech.files.wordpress.com/2018/08/5g-great-risk-for-eu-us-and-international-health-martin-pall.pdf>
- vii Beatty, K. (2019 May) Environmental and agricultural reasons to reduce wireless & electromagnetic exposures. Tree Letter. Last Tree Laws. <https://www.lasttreelaws.com/tree-letter.html>
- viii Pall, Martin, Professor Emeritus of Biochemistry and Basic Medical Sciences of Washington State. (2018 Nov 16). 5G: Compelling evidence of great harm caused by EMF exposures & the mechanism that causes such harm. 5th Generation Wireless: Technological Revolution or Pandora’s Box? Public forum and community leaders briefing sponsored by the Electromagnetic Safety Alliance and Pima County 5G Awareness Coalition
- ix (2017 May 9) A Groundbreaking Auction to Realign Use of the Public’s Airwaves. Federal Communications Commission. Available at <https://www.fcc.gov/about-fcc/fcc-initiatives/incentive-auctions>
- x Massachusetts Department of Innovation and Technology. (2019 Mar 20 Last Updated) City of Boston Providers. City of Boston. Available May 26, 2019, at <https://www.boston.gov/departments/broadband-and-cable/licensed-wireless-providers-boston>
- xi In the Matter of Updating the Commission’s Rule for Over-the-Air Reception Devices. WT Docket No. 19-71. Notice of Proposed Rulemaking. Federal Communications Commission. FCC 19-36. 2019 Apr 12. Available online at <https://docs.fcc.gov/public/attachments/FCC-19-36A1.pdf>
- xii (2019 Apr 25) Verizon Says 20 More Cities Getting 5G This Year, Including Boston. CBS Boston. Available at <https://boston.cbslocal.com/2019/04/25/verizon-5g-wireless-network-samsung-galaxy-s10/>
- xiii P. Mandl, P. Pezzeri and E. Leitgeb (2018) Selected Health and Law Issues Regarding Mobile Communications with Respect to 5G. 2018 International Conference on Broadband Communications for Next Generation Networks and Multimedia Applications (CoBCom) Graz, Austria. pp. 1-5. IEEE Xplore. doi: 10.1109/COBCOM.2018.8443980
- xiv Based on 3 transmitters attached to a pole for a small cell facility, an expectation of exceeding guidelines within 11 feet; an expectation of exceeding guidelines within 3 feet for one transmitter. Reference from Afflerbach, A., CTC Technology & Energy. (2017 Nov 10). Comparison of RF exposure and distance from a small cell site. Study contracted for Montgomery County, Maryland. Columbia Telecommunications Corporation.
- xv P. Ben-Shai, personal communication, June 2, 2019: “[Dr. Neufeld] shows that in fact the expected temperature rise because of the linear response of tissue to the short time pulse could lead to far high temperature rises, albeit transient, in the skin. As the repetition rate is in milliseconds, yet the dissipation rate of heat via circulation or perfusion is in seconds, this could lead to tissue damage.” Reference to Neufeld E, Kuster N. (2018) Systematic Derivation of Safety Limits for Time-Varying 5G Radiofrequency Exposure Based on Analytical Models and Thermal Dose. [Note: study tested 10 GHz]. Health Phys. 705-711. doi: 10.1097/HP.0000000000000930.
- xvi P. Ben-Shai, personal communication, June 2, 2019: “Our work still used the concept of a continuous wave, but at frequencies for 10 GHz to 700 GHz. The key point of our simulations is that we took into consideration skin structures, like layers and sweat duct, that are of the right dimension and geometry to interject with with these frequencies in terms of classical phenomena like standing wave absorption and helical antenna response (because of the helical nature of the sweat duct). We showed that the SAR rates were far higher than expected because of the existence of the sweat duct and its ability to act like an antenna (as stated by Yael). We did not include in our model the penny model of heat distribution due to perfusion and blood circulation (as Neufeld did) our the linear response of the duct to a time pulse.

However, I imagine that the temperature rise would also be much higher than expected, base on Neufeld's results."

Reference to: Betzalel N, Ben Ishai P, Feldman Y (2018) The human skin as a sub-THz receiver - Does 5G pose a danger to it or not? Environ Res. 163:208-216. doi: 10.1016/j.envres.2018.01.032.

- xvii Stein, Y. (2016 July 9) Topic: G5 millimeter wave technology (Sub Terahertz frequencies/ Sub-THz). Environmental Health Trust. Available online at <https://ehtrust.org/letter-fcc-dr-yael-stein-md-opposition-5g-spectrum-frontiers/>
- xviii Y. Stein, personal communication, July 11, 2019: *"You are correct that even at a power level that is not high pain could be triggered by nociceptors because the waves tend to concentrate around the sweat duct. Exactly at what level could a response be provoked? - there is someone else who may be able to answer that - the physicists who did the research: Prof. Yuri Feldman from the Hebrew University, and Dr. Paul Benishai, who is now working at Ariel University. Which part exactly of the nervous system would be or could be triggered to action? - I am not sure - but yes, even without pain some parts of the nervous system are triggered or changed. It is known that these frequencies affect the nervous system in general - this has been known since a very long time ago - pls see the attached document (from 1977)."*
- xix The Communications Act denies the FCC jurisdiction with respect to "intrastate communication service." [Communications Act of 1934. US Code Title 47 §152 (b)]
- xx Aditya Kaul (2018 Sep 7) How Will 5G Impact AI Processing at the Edge? Tractica. Available at <https://www.tractica.com/artificial-intelligence/how-will-5g-impact-ai-processing-at-the-edge/>
- xxi Pennington A. (2017 Summer) Getting Ready for Video Over 5G: How Should the Industry Prepare? Streaming Video. Available at <http://www.streamingmediaglobal.com/Articles/Editorial/Featured-Articles/Getting-Ready-for-Video-Over-5G-How-Should-the-Industry-Prepare-118712.aspx>
- xxii Grothaus M (2019 Mar 1) 5G means you'll have to say goodbye to your location privacy. Fast Company.
- xxiii Malka, N (2019 Dec 20) Drones leveraging 5G technology. Sky Hopper. Available at <https://www.skyhopper.biz/drones-leveraging-5g-technology/>
- xxiv (2017 Apr 27) Peer Review in the Raw: N.P. Singh, the Comet Assay and "Radiation Research." Microwave News. Available at <https://microwavenews.com/news-center/singh-comet-assay-radiation-research>