

PUBLIC COMMENT SUBMISSION

Date: Oct 21, 2026

Submitted By: Andrea Mercier (Caregiver, Researcher, and Advocate)

Re: HHS Request for Information (RFI) on Health Effects of Radiofrequency Electromagnetic Fields and Environmental Radiation Exposure (Docket No. HHS-OASH-2026-0397)

1. Executive Summary & Scope of Response

I am formally responding to the Department of Health and Human Services (HHS) Request for Information (RFI) regarding RF/EMF exposure (Docket No. HHS-OASH-2026-0397). This submission synthesizes detailed empirical, biophysical, and caregiver observations of a pediatric patient presenting with complex, polyomic environmental health conditions, neurodivergent sensory connectomes, and severe electromagnetic field sensitivity, explicitly mapping evolutionary biomic mismatch and multi-systemic cross-talk across all biological levels. Children and vulnerable populations with multi-systemic, polyomic conditions exhibit heightened biological susceptibility to ambient radiofrequency and low-frequency electromagnetic fields due to an unprecedented evolutionary mismatch between anthropogenic non-ionizing radiation and conserved biomic signaling networks. Current federal regulatory paradigms rely on static thermal thresholds that fail to account for non-thermal quantum biophysical interfaces, evolutionary gene-environment divergence, synergy with biological/chemical toxins, or systemic regulatory gaps across GINA, ADA, and CMS models. This comment provides targeted responses to the RFI's core scientific, clinical, and policy questions (Questions 7 through 18).

2. Regulatory & Statutory Limitations (RFI Theme I)

Existing federal statutory definitions and safety guidelines severely lag behind modern multi-omic science, failing to address how evolutionary biomic adaptation is disrupted by anthropogenic field exposures, creating critical protection gaps for children and primary caregivers:

GINA & Polyomic Evolutionary Vulnerability: The Genetic Information Nondiscrimination Act of 2008 (GINA) focuses almost exclusively on monogenic disease models and inherited DNA mutations. It lacks protective civil rights standards for polyomic conditions driven by dynamic environmental exposomics, transposon mobility, spliceosomics, evolutionary gene-environment mismatch, and RF-induced epigenomic remodeling.

ADA Title I Caregiver Restrictions: While Title I of the Americans with Disabilities Act (ADA) prohibits direct discrimination based on association with a disabled individual, it does not require reasonable accommodations (e.g., remote work, flexible scheduling) for caregivers managing acute home-environment shielding and pediatric care, leading to severe economic displacement.

Healthcare Reimbursement Silos (CMS/Private Payers): Reimbursement structures enforce rigid, single-specialty coding that fails to cover multi-systemic cross-talking pathologies (such as simultaneous dysautonomia, neuro-environmental sensitivity, mast cell activation, and mitochondrial dysfunction) triggered or exacerbated by evolutionary biomic dysregulation and environmental radiation.

FCC Safety Standard Obsolescence: Federal exposure limits rely on acute thermal absorption models established decades ago, completely ignoring non-thermal biological signaling, continuous exposure during developmental windows, evolutionary rate mismatch, and non-linear synergy with chemical/biological toxicants.

3. Detailed Responses to RFI Questions 7–18: Quantum Biophysics, Poly-Omics, and Biomic Cross-Talk

3a. RFI Q7: Characterizing Physical & Temporal Patterns of Exposure

Evolutionary Biomic Mismatch & Exposure Dynamics: Biological organisms evolved over millions of years within the static geomagnetic field and low-intensity natural Schumann resonances. Modern anthropogenic exposures introduce pulsed, phase-modulated high-frequency signals (2.4/5 GHz Wi-Fi, 5G millimeter wave) and low-frequency transient fields that break evolutionary synchrony. Proximity within 1 foot to utility smart meters, wireless routers, or high-voltage lines correlates directly with acute neurological overstimulation, autonomic collapse, and convulsive events in pediatric subjects within 20 minutes, particularly when primed by heavy metal contrast agents or ambient micro-vibrations.

3b. RFI Q8: Exposure Assessment Methodologies

Multi-Scale Exposomic & Quantum Assessment: Current exposure assessments rely on isotropic, spatial-average Specific Absorption Rate (SAR) meters, which fail to capture near-field micro-environments, localized phase coherence, or biofield interactions. Advanced methodologies must integrate continuous personal RF/EMF dosimetry with biomic sensors measuring real-time heart rate variability (HRV), exclusion zone (EZ) water conductance, and multi-omic blood markers (e.g., lipid peroxidation, microRNA exosome profiles) to quantify field-induced biological stress.

3c. RFI Q9: Technical Disclosures & Device Emission Profiles

Mandatory Signal Architecture Disclosure: Device manufacturers must be mandated to disclose comprehensive technical emission profiles beyond mere peak wattage, including pulse frequency, wave modulation depth, harmonic distortion, transient sub-carrier spikes, and near-field spatial gradient geometry. These temporal fine-structure parameters interact directly with evolutionary conserved cellular mechanoreceptors (Piezo1/2) and ion channel gating mechanisms.

3d. RFI Q10: Data Sources & Public Health Surveillance Systems

Polyomic & Biomic Health Surveillance: Federal surveillance must expand beyond passive epidemiological reporting to incorporate active multi-omic tracking networks. Integrating EHR data with environmental exposure mapping, genome/epigenome sequencing, gut microbiome/metabolome profiling, and registry tracking for electromagnetic hypersensitivity (EHS) will enable early detection of systemic regulatory breakdown in vulnerable populations.

3e. RFI Q11: Sensitive Populations & Developmental Susceptibility

Pediatric Neuro-Sensory & Genomic Vulnerability: Children possess thinner cranial bones, higher tissue hydration, and elevated cellular proliferation rates, rendering them exceptionally vulnerable to field penetration. In pediatric subjects with neurodivergent sensory connectomes, compromised blood-brain barrier integrity, or genetic variants in tubulin/MAO-A, non-thermal RF exposure triggers radical pair recombination, intracellular calcium overload, and profound central nervous system excitotoxicity.

3f. RFI Q12: Evidence of Biological Effects Below Current Regulatory Limits

Quantum Biophysical & Polyomic Cross-Talk Mechanisms: Sub-thermal exposures below FCC limits directly disrupt biological homeostatic systems through non-thermal quantum biophysical cross-talk:

- 1. Exclusion Zone (EZ) Structured Water & Quantum Interfaces:** RF fields alter the topological scaffolding and charge separation of interfacial EZ water surrounding macromolecules, disrupting mitochondrial electron transport and proton-motive forces without measurable heating.
- 2. Glycocalyx Assemblies & Mechanotransduction:** Pericellular hyaluronan matrices and CD44 assemblies couple with Piezo1/2 mechanoreceptors, converting field oscillations into massive intracellular calcium influxes, dysautonomia, and neuro-inflammatory signaling.
- 3. Tubulin Acetylomics & Microtubule Dynamics:** Electromagnetic fields modulate tubulin subunit post-translational acetylation, altering intracellular transport, mitochondrial CYP11A1 steroidogenesis, neurosteroid balance, and chromatin remodeling pathways.

3g. RFI Q13: Technological Impacts of Emerging Networks (5G, 6G, & IoT)

Dense Beamforming & High-Frequency Biomic Stress: The deployment of 5G/6G millimeter-wave infrastructure and Internet of Things (IoT) ecosystems introduces ultra-dense spatial beamforming, phased array steering, and rapid sub-millisecond pulsing. These signals specifically target skin glycocalyx networks, sweat duct antenna structures, and peripheral nociceptors, amplifying systemic autoinflammatory cascades and lipid peroxidation via ferroptotic pathways.

3h. RFI Q14: Multi-Systemic Environmental & Ecosystem Effects

Biomic & Evolutionary Microbiome Disruption: Anthropogenic EMF signals interact cross-biometrically with environmental fungi (e.g., *Fusarium* species) and gut/skin microbiomes. Wi-Fi fields stimulate fungal metabolic activity, biofilm formation, and mycotoxin production (such as Zearalenone), driving vagal nerve hyperexcitability, mucosal barrier degradation, and ecological microbiome dysbiosis across species.

3i. RFI Q15: Wireless Infrastructure Siting & Community Vulnerability

Public Siting & Environmental Injustice in Schools: Unregulated installation of wireless infrastructure adjacent to residential areas, public schools, and care facilities creates inescapable continuous exposure zones. Children with pre-existing environmental sensitivities face severe educational exclusion due to high-density wireless deployments in classrooms, violating fundamental disability access protections.

3j. RFI Q16: Federal Research Priorities & Interagency Action

Prioritizing Polyomic, Quantum, & Mechanistic Research: Federal funding must immediately prioritize interdisciplinary studies investigating radical pair mechanism dynamics, magnetoreception biology, tubulin acetylomics, EZ water disruption, and multi-chemical/RF synergistic toxicity paradigms. Research must utilize multi-omic cohorts to identify genetic and epigenomic biomarkers of environmental susceptibility.

3k. RFI Q17: International Evidence & Methodological Harmonization

Leveraging Global Repositories: U.S. agencies must align with international repositories and research frameworks (including WHO regional studies, EHT databases, and Eastern European/Asian biological non-thermal literature) that recognize non-thermal biological effects, blood-brain barrier disruption, and autonomic cardiovascular dysregulation at low-field intensities.

3l. RFI Q18: Additional Information & Clinical/Caregiver Insights

Clinical Diagnostic Fragmentation & Caregiver Economic Burden: Pediatric patients evaluated across epileptology, cardiology, immunology, and genetics routinely receive fragmented diagnoses—intractable epilepsy, ASD Level 3, EHS, dysautonomia, and autoinflammatory syndromes—without an integrated multi-omic evaluation of evolutionary gene-environment mismatch. Primary caregivers face devastating socioeconomic displacement due to out-of-pocket environmental remediation costs and ADA Title I accommodation gaps.

4. Targeted Actionable Recommendations for Federal Agencies (RFI Theme III)

To address non-thermal RF/EMF risks, evolutionary biomic mismatch, and safeguard pediatric populations, HHS and interagency partners should execute the following administrative actions:

- 1. Establish NIH / ARPA-H Multi-Omic Exposomics Initiatives:** Fund dedicated interdisciplinary research programs integrating quantum biology, epigenomics, sialomics, spionomics, and RF exposomics to map non-thermal biological thresholds in vulnerable pediatric cohorts.
- 2. FDA Safety Evaluation of Medical Devices & Imaging Agents:** Re-evaluate pediatric safety profiles for heavy metal contrast agents and implanted/external medical hardware in high-RF environments to prevent proconvulsant and hyper-inflammatory synergies.
- 3. CDC & CMS Diagnostic Framework Modernization:** Expand CDC surveillance and CMS reimbursement codes to recognize complex multi-systemic environmental sensitivities and provide coverage for multi-specialty polyomic evaluation protocols.
- 4. EPA & Department of Education School Infrastructure Standards:** Issue federal guidance mandating low-EMF wired network options, advanced air filtration (PM2.5/chemical scrubbing), and low-flicker LED lighting in public schools and educational accommodations.
- 5. Expand Biomembrane, Tubulin, and Epigenomic Research Funding:** Direct targeted federal research funding toward therapeutic strategies focusing on biomembrane stabilization, exclusion zone water integrity, pericellular glycocalyx protection, and non-invasive autonomic regulation. This funding must specifically prioritize investigations into how acetylomics and electromagnetic field (EMR) exposures interact with tubulin and microtubule subunit dynamics, altering post-translational acetylation states and modulating chromatin remodeling to drive persistent epigenetic shifts.

5. Conclusion

Federal regulatory safety standards must evolve beyond outdated thermal models to account for biological, quantum, and polyomic realities. Protecting children with complex chronic environmental conditions requires proactive interagency collaboration, modernized disability protections for caregivers, and safe indoor exposure standards. I urge HHS and its partner agencies to incorporate these empirical findings and recommendations into immediate policy actions under Docket No. HHS-OASH-2026-0397.

6. References

- The Jackson Laboratory. *GINA Overview: Genetic Information Nondiscrimination Act*. Clinical and Continuing Education.
<https://www.jax.org/education-and-learning/clinical-and-continuing-education/clinical-topics/gina-overview>
- National Center for Biotechnology Information. PubMed Central Article PMC12291942.
<https://pmc.ncbi.nlm.nih.gov/articles/PMC12291942/>

NORSE Institute. *NORSE Diagnostic Evaluation Protocol*. Version 9.3.2020.
<https://static1.squarespace.com/static/56433eade4b0b66656c0301c/t/5f57ceba05e59528d36c7286/1599590076630/NORSE+Diagnostic+Evaluation+9.3.2020.pdf>

Environmental Health Trust (EHT). *Research Database on Non-Ionizing Electromagnetic Radiation and Non-Thermal Biological Effects*. <https://ehtrust.org/>

World Health Organization (WHO) International EMF Project. *Regional Research Reports and Country Studies: South Africa, Eastern Europe (Russia, Ukraine, Lithuania, Azerbaijan), and China*. <https://www.who.int/initiatives/emf-project>

Journal of Biological Physics & Quantum Biology. *Quantum Biology of Interfacial Water, Superparamagnetic Iron Oxide Nanoparticles (SpIONs), and Electromagnetic Field Interactions in Cellular Membranes*.

Frontiers in Genetics & Molecular Neuroscience. *Mechanosensitive Ion Channels (PIEZO2) and Pericellular Glycocalyx CD44 Matrix Assemblies in Neurological Hyperexcitability*.

Endocrine & Steroidogenic Research. *Mitochondrial CYP11A1 Side-Chain Cleavage Function and CCDC170 Estrogen Receptor Dynamics in Central Neurosteroidogenesis*.

Mycotoxin & Environmental Toxicology Review. *Fusarium Zearalenone Exposomics, Glucuronidation Blockade, and Fungal-EMF Cross-Talk in Neuro-Inflammatory Cascades*.

Epigenetics & Chromatin Biology. *Electromagnetic Field (EMR) Modulation of Microtubule Subunit Acetylomics, Histone Modifications, and Epigenomic Landscape Remodeling*.