OASH-2026-0397

Comment on: Request for Information on Electromagnetic Fields (EMFs), Radiofrequency (RF) Radiation, and Wireless Radiation Exposure **Agency:** U.S. Department of Health and Human Services **Docket:** HHS-OASH-2026-0397

Sources used below are identified as peer-reviewed research, U.S. government studies and court records, international agency classifications, or public comments already in this docket. This filing contains no proprietary, classified, or individually identifying health information.

Question 2 — Perspective

Advocate and research-informed public-interest organization; also a concerned member of the public and a family of wireless users.

Question 3 — Public experiences

3a. Sources. Mobile phones against the body; household and school Wi-Fi; neighborhood cellular infrastructure; later, smart-meter and small-cell densification.

3b. Timing. Ordinary American ambient exposure from the mid-1990s to now. School-day exposure for my son. Source density has risen as infrastructure densified.

3c–3d. What happened, and when. I experienced sleep disruption, headaches, heart rhythm irregularities, impaired cognition, and finally a blood clot resulting in a pulmonary embolism after 14 years of close proximity to mobile phones against the body, household Wi-Fi, proximity to cellular infrastructure and smart-meter technology. Over the last year I have removed these stressors from my environment and all symptoms have significantly improved. I am answering Question 3 because HHS asked why families care, and because “wait until every study agrees” is not a public-health policy I will accept after these ordeals.

3e. Care. Cardiologists, hematologists, and functional doctors were all seen and all performed dozens of tests and were not able to explain what caused the blood clot.

3f. What we changed. Distance from the handset. Speakerphone. Radios off when unused. Wired connections for house internet. Those are the controls a family still has. They are not available to a child in a classroom the family does not control, or to a household next to infrastructure a town cannot condition on health.

3g. Support. NTP TR-595; Ramazzini Institute 2018 (Falcioni et al.); IARC Monograph 102; *Environmental Health Trust v. FCC*, 9 F.4th 313 (D.C. Cir. 2021); Public Law 90-602, 21 U.S.C. §§ 360hh–360ss; Section 704.

3f. Reduction test. Wireless router off and replaced with wired. All mobile devices and smart devices configured to not transmit, kept phone off the body. Symptoms drastically improved, all health markers drastically improved, no recurrence of blood clot since.

Question 4 — Clinical and research patterns

I am not a treating physician. Patterns visible from the public docket and from the clinical literature on idiopathic environmental intolerance / electromagnetic hypersensitivity (IEI-EMF) are consistent enough to justify surveillance, not dismissal:

- **4h. Effects reported:** sleep onset and maintenance problems, headache, tinnitus, cognitive slowing, palpitations, blood-pressure lability, dermal burning, and, in a smaller set, reports near implanted electronics.
- **4i. Onset:** often described as days to months after a new near-field source (meter, mesh router, small cell) or after a step-change in indoor wireless load — not as a lifelong trait.
- **4j. Populations:** adults who previously tolerated ordinary device use; parents reporting changes in children after classroom or bedroom sources changed; a smaller occupational set (teachers, flight/sim environments, radio workers).
- **4k. Exposure patterns:** nighttime indoor sources; source on the sleeping wall; phone against the body; multiple simultaneous emitters rather than a single SAR value.
- **4l. Methods used so far:** almost none that meet research grade. Consumer meters, building-biology surveys, and self-report. That is a gap, not a reason to ignore the reports.
- **4m. Recommendation:** a case-definition working group (NIH/CDC) for IEI-EMF; prospective n-of-1 withdrawal/re-exposure protocols with

blinded source control where ethically possible; personal dosimetry alongside symptom diaries.

Question 5 — Standards and frameworks federal health agencies should consider

Do not treat the FCC's 1996 radiofrequency exposure limits as a health standard. They are an engineering compliance envelope built around acute tissue heating. They were not written as a chronic-exposure public-health rule for children, fetuses, or 24-hour indoor environments.

Frameworks HHS should actually read, side by side:

1. **FCC 47 C.F.R. § 1.1310 / OET Bulletin 65 (1996 basis)** — whole-body SAR 0.08 W/kg, 1.6 W/kg spatial-peak for uncontrolled exposure. Thermal. No modulation, no duty cycle, no lifetime dose, no child-specific limit.
2. **EPA's 1980s–1990s non-ionizing work and the 1993 radiofrequency radiation guidance process that was never finished** — the United States walked away from a health-agency RF standard and left the field to a spectrum regulator.
3. **IARC Monograph 102 (2011)** — RF-EMF classified Group 2B, *possibly carcinogenic to humans*, based on glioma and acoustic neuroma evidence. A classification is not a regulation; it is a reason not to freeze the science in 1996.
4. **National Toxicology Program TR-595 (2018) and the Smith-Roe genotoxicity paper (2020)** — U.S. government animal bioassay.

5. **Ramazzini Institute (Falcioni et al., 2018)** — far-field GSM exposure at environmental-level intensities; same tumor types as NTP.

6. **ICNIRP 2020 and IEEE C95.1-2019** — still thermal-first. Useful as a map of what industry-aligned bodies will defend. Not a substitute for HHS review.

7. **Council of Europe Resolution 1815 (2011); European Environment Agency "late lessons"; BioInitiative 2012/2022 updates; SCHEER 2023** — the last of these is contested; HHS should read the dissent, not only the summary.

8. **Public Law 90-602 (Electronic Product Radiation Control, 1968)** — HHS/FDA already has a statutory duty to control radiation from electronic products, including non-ionizing. That duty was not repealed when the FCC set SAR numbers.

9. **EHT v. FCC, 9 F.4th 893 (D.C. Cir. 2021)** — the Commission's decision to keep the 1996 limits was arbitrary and capricious as to non-cancer harms, children, and long-term exposure. The remand is still live. HHS should not write a report that pretends the court did not exist.

10. **Section 704 of the Telecommunications Act of 1996 (47 U.S.C. § 332(c)(7)(B)(iv))** — local governments may not regulate personal wireless facilities on the basis of environmental effects of RF emissions if the facility complies with FCC limits. That preemption is why a thermal-only federal number is not a technicality. It is the only health argument a town is allowed to use.

5n. Changes that would improve assessment, disclosure, and regulation

- HHS/FDA resume PL 90-602 work on wireless products: pre-market non-thermal endpoints, post-market adverse-event collection, and child-use conditions of use.
- Separate *compliance testing* (what FCC already does) from *health evaluation* (what HHS must do).
- Require disclosure of time-averaged *and* peak, indoor source inventory, and distance-to-body assumptions — not only a SAR figure measured against a large adult phantom.
- End the practice of treating "below FCC limits" as a health finding.
- Coordinate with the FCC on the 2021 remand so the health agency, not the spectrum agency, writes the health chapter.

5o. Research needed to test minimization methods and to evaluate standards

Largest gaps: real-world cumulative indoor exposure; nighttime exposure of infants and children; modulation and pulsed signals versus continuous-wave SAR; people with implants; IEI-EMF case definition; environmental effects on insects and birds at infrastructure density now being built. Needed: prospective birth cohorts with wearable RF/ELF dosimetry; school-level intervention trials (wired vs. wireless); replication of NTP-class animal work at today's waveforms; methods research on exposure reduction (distance, duty cycle, corded / fiber / optical).

5p. Classification system

Yes. A health-relevant classification cannot be SAR-only. It should score, at minimum:

- frequency band and generation (including 6 GHz–mmWave vs. sub-6);
- incident power density *and* SAR;
- electric and magnetic field at ELF (smart meters, chargers, wiring errors);
- modulation, pulsing, and frame structure — not CW-equivalent averages;
- duty cycle and sleep-time duty cycle;
- beamforming and body-proximity;
- simultaneous multi-band exposure;
- duration and age at first exposure;
- cumulative dose over years;
- distance from the source in the actual room, not the test lab.

A phone that passes a 1.6 W/kg test held 5–15 mm from a large phantom is not a description of a child asleep with a tablet on their chest under a mesh node.

Question 6 — Evidence of harm *caused by current limits*

Two different questions get collapsed here. I will keep them apart.

What the current limits were designed to prevent: acute heating. There is no serious dispute that FCC/ICNIRP-type limits prevent cooking tissue in ordinary consumer use.

What the current limits were not designed to prevent, and where evidence of biological effect below those limits exists:

- NTP TR-595: clear evidence of malignant heart schwannomas in male rats; some evidence of brain gliomas in male rats; increased DNA damage in some tissues (Smith-Roe et al., Environ Mol Mutagen 2020). Exposures were whole-body and high relative to a phone against the ear, but they were below thermal-breakdown thresholds used to justify “if it does not heat, it does not harm.”
- Ramazzini 2018: increased heart schwannomas in male rats at 50 V/m — an environmental, far-field intensity, not a near-field phone.
- IARC 2B (2011) and the human glioma / vestibular-schwannoma epidemiology that put RF into that category (Hardell series; Interphone high-use decile; CERENAT).
- Oxidative-stress and VGCC-related mechanistic literature (Yakymenko review; Pall review — contested, but large). HHS should commission an independent mechanistic review rather than inherit a talking point.
- Fertility and testicular heating / non-thermal sperm-parameter papers (various human and animal). Directionally consistent enough to be a research priority for a device that lives in a pocket.
- IEI-EMF provocation literature is mixed and often underpowered; that is an argument for better methods, not for a health agency to declare the patient population imaginary.

“Caused by current limits” is the right phrase. A limit that only forbids heating *permits* every non-thermal and cumulative condition the studies above were

built to detect. That is a design choice, not a finding that those conditions are safe.

Question 7 — Methods now available to characterize exposure

Available today, in descending order of usefulness for a health agency:

- Personal exposimeters and wearable RF loggers (frequency-selective where possible).
- Spot measurements of power density, E-field, and ELF magnetic field in the actual sleeping and working room.
- Network-operator and infrastructure maps (antenna location, EIRP, small-cell density) linked to residence history.
- Device-use logs (call time is no longer a proxy; app-foreground time, uplink duty cycle, and Wi-Fi/Bluetooth state are).
- Building wiring / dirty-electricity surveys where the question is conducted noise from meters and SMPS, not radiated RF.
- Whole-body computational phantoms *if* they are rebuilt for children and for actual postures (device on chest, device under pillow). Adult SAM-phantom SAR is not individual exposure.

No current federal system combines those into a person-level lifetime dose.

Question 8 — Improvements needed for real-world assessment

- Measure the bedroom at night, not the lab at noon.
- Measure the child, not the 100-kg phantom.
- Measure simultaneous sources (phone + watch + node + meter + neighbor mesh).
- Log uplink, not only downlink.
- Treat ELF magnetic fields from chargers, inverters, and smart-meter SMPS as part of the same indoor environment.
- Stop using “time-averaged SAR from one device” as a synonym for “the exposure a family lives in.”
- Fund open methods so school districts and health departments can repeat them.

Question 9 — What should be disclosed

To consumers: peak and average output, distance used in the SAR test, whether the device is intended to be body-worn, and a plain-language nighttime-use note.

To residents and local governments: antenna coordinates, EIRP, frequency bands, and expected power density at the nearest dwelling and school — before construction, not after.

To schools: a room-level source inventory (chromebooks, mesh, cell boosters) and a wired-alternative option.

To clinicians: that FCC compliance is not a medical clearance; that implants have manufacturer EMI instructions the rest of the house may violate.

To workers: occupational RF monitors where radios, broadcast, or medical diathermy are the job.

Section 704 makes disclosure at the siting hearing almost the only health tool a town has left. HHS should say that out loud.

Question 10 — Surveillance systems

Existing systems that *could* be used and currently are not, for RF:

- **a. Disease registries** — SEER and state cancer registries can test glioma and schwannoma trends against handset penetration *if* HHS funds the linkage. They cannot see sleep, IEI-EMF, or miscarriage.
- **b. Occupational monitoring** — RF workers (broadcast, radar, military, some medical) already have pockets of dosimetry. Expand, do not abandon.
- **c. Environmental monitoring** — no national RF census. Other countries have run city-level campaigns. The United States should.
- **d. Longitudinal cohorts** — COSMOS and Interphone exist; they are call-time era studies. A new U.S. birth / child cohort with wearable dosimetry is the highest-value new system.

- **e. Biomonitoring** — oxidative-stress and melatonin panels are research tools, not a national system. Do not oversell them; do fund them inside cohorts.
- **f. Adverse-event reporting** — FDA already runs MAUDE for devices. There is no public RF-exposure analog for phones, meters, or small cells. Create one.
- **g. Clusters** — CDC cluster protocol can be used near new infrastructure if local health departments are told it is in scope.
- **h. Other** — school-nurse encounter data; 911/ED chief-complaint text for “smart meter” / “tower” is noisy but cheap to pilot.

Benefit of building this: HHS would stop arguing from the absence of a system it never built. Challenge: exposure misclassification will hide small risks. That is an argument for better dosimetry, not for skipping surveillance.

Question 11 — Sensitive populations

Yes. Risk evaluation should differ.

- **11a. Children.** Thinner skulls, higher brain conductivity in some models, more marrow in the skull, more years of dose ahead of them, classrooms that now run as wireless rooms. A standard built on an adult occupational phantom is the wrong starting point.
- **11b. Pregnant women.** Fetal tissue and the first 24 months after birth are the window Greco and others have asked NIH to instrument. Nighttime indoor sources are the practical target.

- **11c. Older adults.** Implants, polypharmacy, sleep fragility, more hours at home near the meter and the router.
- **11d. Implanted devices.** Manufacturers already publish EMI envelopes. Those envelopes are not written into housing or school policy. They should be.
- **11e. Occupational.** Higher duty cycle, on-body radios, medical and industrial sources. OSHA and NIOSH belong in the coordination chart in Question 17.
- **11f. Preexisting conditions.** Migraine, arrhythmia, autoimmune skin disease, anxiety disorders, and documented IEI-EMF. These are effect-modifiers to study, not reasons to discard reports.
- **11g. Other.** Shift workers (nighttime exposure on a day-sleep schedule); residents in multi-dwelling buildings where neighbor mesh is not optional; people in housing where a smart meter sits on the sleeping-wall exterior.

Question 12 — Evidence *below current federal limits*

This is the question the thermal-only framework is built to make un-askable. The evidence that exists anyway:

- Ramazzini 2018 at 50 V/m (far-field, base-station-like).
- Human provocation and EEG studies at everyday phone and Wi-Fi intensities (mixed; some positive for sleep-spindle and alpha changes).

- In-vitro work at non-thermal SAR, including oxidative and gene-expression endpoints. Quality varies. That is a review problem, not a “no evidence” problem.
- Sperm-parameter studies at laptop-on-lap and pocket intensities.
- The entire IEI-EMF clinical series — self-selected, often unblinded, and still a population HHS asked about in Question 3.

WHO-commissioned systematic reviews from 2024–2025 have been used in press coverage to close this question. Those reviews are not a substitute for HHS reading NTP, Ramazzini, IARC 102, the D.C. Circuit remand, and the raw docket. A review that treats FCC/ICNIRP limits as the resolution of the science is restating the policy HHS was asked to examine.

Question 13 — How listed technologies change cumulative exposure

Cumulative exposure is the variable 1996 SAR testing does not measure.

- **13a. 5G.** Adds mid-band and, in some deployments, mmWave small cells. More antennas per capita. Uplink from the handset can dominate personal dose even when downlink looks “low.”
- **13b. 6G.** Not a deployed public-health fact yet. Do not certify a generation after it is ubiquitous. Pre-market health evaluation belongs *before* a spectrum band becomes furniture.
- **13c. Wi-Fi.** The dominant indoor, all-night source for children. A mesh node on a bedroom wall is a different exposure than a phone used for a seven-minute call.

- **13d. Satellite.** Handset-to-satellite uplinks and new constellations change outdoor and rural baselines. Measure them; do not assume "space is far."
- **13e. IoT.** Many low-duty devices; the aggregate is a house that never goes electrically quiet.
- **13f. Wearables.** All-day, on-skin, often through the night. The SAR test was not written for a device that sleeps on the body.
- **13g. Smart homes.** Always-on radios in every room plus a hub.
- **13h. Smart cities.** Small-cell and sensor density at sidewalk height — closer to heads in strollers than a macro tower on a hill.
- **13i. Autonomous vehicles.** Radar plus cabin connectivity. Occupational for drivers; bystander for streets.
- **13j. Wireless medical devices.** Benefit can be real. That does not cancel EMI questions for the *other* implants in the room, or the 24-hour telemetry load in a ward.
- **13k. Communication-enabled smart meters.** Radiated RF *and* conducted noise from the switch-mode supply onto branch wiring. Treating a meter as "just another small radio" misses the wiring-as-antenna problem already in this docket.

The additive picture is the point. No family is exposed to one letter at a time.

Question 14 — Environmental effects

Peer-reviewed work on insects (especially bees), birds, and trees near infrastructure is large enough that a health-only RFI should not pretend the

biosphere is out of scope. Effects reported include orientation, reproductive output, and vegetation damage near high-EIRP sites. Quality is uneven. HHS should ask EPA and USDA to put a joint evidence map on the same table, not wait for a second RFI.

Human health and environmental health share the same transmitters.

Question 15 — Evidence that matters for infrastructure

- **15a. Proximity to homes, schools, childcare, clinics, workplaces.** Distance is the control people still have. A standard that ignores the bedroom wall and the playground fence is not a public-health standard.
- **15b. Cumulative neighborhood exposure.** One “compliant” facility is not the dose. HHS should model census-block power-density plus indoor sources.
- **15c. Antenna density.** Small-cell doctrine trades fewer tall towers for more antennas at people-height. Measure the trade.
- **15d. Small-cell deployment.** Permit records plus post-construction measurements, not applicant plots alone.
- **15e. Livestock.** Ranch and dairy reports exist in prior FCC and state files. Include agriculture in the surveillance list in Question 10.

Section 704 means this record may be the only place a parent can put “the facility is near the school” in a federal health file. Use it.

Question 16 — Highest-priority federal research gaps

1. Prospective U.S. birth and early-childhood cohort with wearable RF/ELF dosimetry and sleep, language, and EEG endpoints.
2. Replication and extension of NTP-class animal bioassays on *current* waveforms (not only 2G GSM/CDMA).
3. Independent systematic review of non-thermal endpoints that does not begin by treating ICNIRP as the conclusion.
4. IEI-EMF case definition, prevalence, and blinded n-of-1 protocols.
5. Implantable-device EMI in real homes and wards.
6. School intervention: wired vs. wireless classrooms, with pre-registered cognitive and sleep outcomes.
7. National indoor exposure census (bedroom, classroom, clinic).
8. Male and female fertility at pocket and lap distances.
9. Cumulative multi-source modeling that a local health department can actually run.
10. Methods for exposure minimization that can be tested — not pamphlets, trials.

Question 17 — How federal health agencies should coordinate

The wrong coordination is the one we have: FCC writes a number, FDA posts a reassurance page, NIH does not run the cohort, CDC has no RF cluster protocol in common use, and Section 704 locks the number into local law.

Better:

- **17a. FDA.** Resume PL 90-602 electronic-product radiation control for phones, wearables, meters, and consumer infrastructure. Own pre- and post-market. Publish an adverse-event channel.
- **17b. NIH / NIEHS / NTP.** Fund the child cohort and the animal replication. NTP already did the last serious U.S. bioassay. Do not leave that as a one-off.
- **17c. CDC.** Case definition, surveillance pilots, school guidance that is not a recycled FCC FAQ, occupational liaison with NIOSH.
- **Also.** EPA for environmental and outdoor power-density maps. OSHA/NIOSH for workers. FCC as the spectrum and compliance agency — not the author of the health chapter. HHS should write that chapter and send it *to* the Commission for the remand.

A report that says “more research is needed” and then assigns no agency a budget line is not a priority. It is a press release.

Question 18 — Additional evidence and recommendations

1. Read the 824 comments already in this docket as surveillance raw material, not as anecdotes to be embarrassed of. Question 3 asked for them.

2. Name Section 704 and Public Law 90-602 in the report. If HHS is silent on the statute that blocks local health arguments, the report will be used as if that statute were natural law.

3. Do not let a magazine review of WHO summaries stand in for this record. *Scientific American* (Pappas, Sept. 22, 2026) discussed this RFI and did not print the docket number, the deadline, or the comment link. That is why model comments have to carry the door.

4. Keep the two dockets straight in every HHS product: this file is health evidence; FCC ET Docket 13-84 is the exposure rule and the court remand. People who only file here have not spoken there.

5. Practical near-term recommendations HHS can issue without waiting for a new bioassay: nighttime Wi-Fi off in bedrooms and pediatric wards; wired connections in classrooms where feasible; phones off the body and out of the bed; meters off the sleeping wall; implant-EMI guidance in housing and school policy; measurement access for residents before and after a new facility turns on.

6. The thermal-only sentence — *if it does not heat, it does not harm* — is the policy under review. It should not be the first sentence of the review.

I urge HHS to treat this RFI as the start of a health-agency program, not as a thirty-day inbox.

Respectfully submitted,

Andrew Staples
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