Public Comment on Electromagnetic Fields, Radiofrequency Radiation, and Wireless Exposure

HHS Request for Information | Docket HHS-OASH-2026-0397
Evidence synthesis focused on current science, exposure assessment, and unresolved federal questions

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Core evidentiary conclusion. The current record does not establish that ordinary, compliant wireless exposure causes disease. It also does not establish that every scientifically relevant question concerning animal findings, developmental endpoints, modern dosimetry, real-world device testing, combined exposures, or the federal reassessment process is closed.

HHS expressly asks commenters to distinguish established evidence, emerging findings, and uncertainty. This submission follows that structure. It gives substantial weight to reassuring human evidence, FDA's current position, and the 2026 Japan-Korea animal studies, while also identifying narrower questions that remain unresolved and are directly responsive to the RFI.

1. Human evidence is reassuring for several heavily studied outcomes

The strongest recent human cancer evidence is generally reassuring. A 2024 WHO-commissioned systematic review of human observational studies found moderate-certainty evidence that near-field RF exposure from mobile-phone use likely does not increase the risk of the principal brain and head tumors studied, including glioma, meningioma, and acoustic neuroma. The prospective COSMOS cohort, with 264,574 participants and a median follow-up of about seven years, also found no association between cumulative mobile-phone call time and glioma, meningioma, or acoustic neuroma. These findings deserve substantial weight.[1-3]

Controlled human experimental evidence is similarly reassuring for acute self-reported symptoms and short-term cognition. The 2024 WHO-commissioned symptom review included 41 studies and 2,874 participants; the meta-analyses generally showed no or small non-significant symptom effects, and participants - including people who attribute symptoms to EMF - did not identify exposure status better than chance. The authors nevertheless noted that experimental conditions differ from real-world exposures in duration, frequency, distance, and position, and that evidence was insufficient for chronic exposure, older adults, or chronically ill populations.[4] A separate 2024 systematic review of 76 human experimental studies found no statistically significant reduction in cognitive performance across the meta-analyses, while identifying residual uncertainty in some subdomains.[5]

These results argue against presenting acute symptom causation or cognitive impairment at compliant exposure levels as established. They do not justify claiming that every chronic, developmental, technological, or exposure-measurement question has been answered.

2. The animal cancer record narrowed substantially in 2026, but it is not accurately described as either established or erased

NTP's 2018 rat study used whole-body 900 MHz GSM- and CDMA-modulated RF at 1.5, 3, and 6 W/kg. Under those experimental conditions, NTP reported clear evidence of carcinogenic activity for malignant heart schwannomas in male rats and related findings for malignant gliomas; the findings in females were weaker. NIEHS cautions that the animal results cannot be directly applied to humans because exposure

levels and durations were greater and exposure was whole-body rather than localized. NIEHS also states that those studies do not apply directly to 4G, 5G, or Wi-Fi technologies.[6-8]

Two coordinated Japanese and Korean studies published in 2026 materially changed this record. Using male Sprague-Dawley rats, 900 MHz CDMA modulation, and a single whole-body SAR of 4 W/kg, both studies found no statistically significant increases in tumors of the heart, brain, adrenal glands, or other major organs, and their genotoxicity assays were negative. These are important negative findings.[9-10]

They were not exact replications of NTP. The German Federal Office for Radiation Protection (BfS) notes that the collaborative studies used one 4 W/kg condition, whereas NTP used three exposure levels including 6 W/kg; therefore they could not reproduce NTP's multi-dose exposure-response analysis, and they did not test GSM modulation. BfS concluded that the new studies substantially inform the question but leave uncertainties in direct comparison with NTP.[11]

The evidence-synthesis dispute also changed in 2026. A 2025 systematic review by Mevissen et al. assigned high certainty of evidence to malignant glioma and malignant heart schwannoma in animals. Belenki et al. subsequently criticized the review's deviation from its pre-published protocol, performed quantitative meta-analyses, and downgraded the evidence to moderate certainty for malignant heart tumors and low certainty for malignant brain tumors because of imprecision. The original review was later corrected by a 2026 corrigendum. The defensible conclusion is therefore not that animal carcinogenicity has been proved, and not that the 2026 studies definitively refuted it, but that the earlier signal has been materially weakened and narrowed into a specific replication and dosimetry question.[12-14]

IARC's current classification is also important to state precisely. RF-EMF remains Group 2B, 'possibly carcinogenic to humans,' based originally on limited evidence in humans for glioma and acoustic neuroma. IARC's 2025-2029 advisory process again assigned RF-EMF high priority for reevaluation because additional evidence has accumulated. A priority designation is a reason to re-examine the record; it is not a prediction that the classification will be upgraded.[15]

3. Other biological findings require exposure-relevant interpretation

WHO-supported systematic reviews have reported adverse reproductive or developmental signals in experimental mammals, including reduced pregnancy rate or fetal weight for some outcomes. However, the experimental exposures underlying important positive findings were generally well above public whole-body limits, and thermal effects could not always be separated from other mechanisms. The same evidence base also contains null findings. These results are most informative as a basis for designing better-controlled, human-relevant exposure studies rather than as proof of harm at ordinary environmental levels.[16-17]

Mechanistic evidence is also mixed and, overall, weak for a reproducible non-thermal pathway at compliant exposures. Recent systematic reviews of genotoxicity and oxidative stress have been largely negative, inconsistent, or very-low-certainty. That evidence weighs against presenting a non-thermal mechanism as established, while leaving room for targeted work only where a specific, reproducible endpoint and exposure condition can be defined.

4. The strongest federal question is not simply whether the 1996 numbers are old - it is whether the present U.S. assessment and testing framework is demonstrably current

FDA currently states that the weight of scientific evidence has not linked cell-phone RF radiation with health problems. FDA also shares regulatory responsibility for cell phones with FCC and describes its role as providing scientific input to FCC, consulting on testing and evaluation techniques, and collecting and

analyzing information on electronic-product radiation hazards and control.[18] Any contemporary HHS assessment should engage that position directly rather than ignore it.

GAO's 2012 review is equally important in both directions. GAO reported that scientific research available at that time had not demonstrated adverse human health effects from mobile-phone RF exposure. At the same time, GAO concluded that FCC could not ensure its exposure limit reflected the latest research because FCC had not formally requested a reassessment from the relevant health and safety agencies. GAO also found that testing requirements might not identify maximum exposure in likely use configurations, particularly when phones are held against the body. GAO recommended formal reassessment of both the limit and testing requirements, with changes if appropriate; both recommendations were later closed as not implemented.[19]

International frameworks have not stood still. ICNIRP updated its RF guidelines in 2020, including provisions above 6 GHz and for brief localized exposures. That fact weighs against treating the age of the FCC numbers, by itself, as proof of scientific obsolescence. At the same time, ICNIRP's own 2025 knowledge-gaps statement identified unresolved questions relevant to protection guidance, including combined exposures, whole-body exposure and core-temperature relationships, ocular thresholds, contact currents, and additional dosimetry needed to improve future application of exposure restrictions.[20-21]

A concrete compliance example also illustrates why test configuration and post-market verification are separate from the question of proven health injury. In 2023, France's ANFR measured an iPhone 12 limb-SAR value above the applicable European limit, temporarily restricted marketing, and later verified a software update that restored compliance. That episode does not establish that users were injured; it does demonstrate that independent compliance testing can identify device-specific exceedances and produce corrective action.[22]

5. The 2021 D.C. Circuit remand is an administrative-law fact, not a scientific finding - and the FCC has now reopened the record

In Environmental Health Trust v. FCC, the D.C. Circuit did not hold that FCC's RF limits are unsafe and did not decide the scientific merits of the cancer evidence. The court remanded because FCC had not provided a reasoned explanation for its decision to retain its guidelines with respect to non-cancer effects, testing procedures, children, long-term exposure, the ubiquity of wireless devices, technological developments, and environmental effects.[23]

That remand is now active again. FCC Public Notice DA 26-997, released September 17, 2026 in ET Docket No. 13-84, seeks comment on the RF-exposure issues remanded by the D.C. Circuit. This timing makes coordination between the HHS RFI and the FCC record especially relevant, but it also counsels against assuming that a new multi-year HHS systematic review could be completed inside FCC's immediate comment window.[24]

6. Questions and workstreams directly supported by the present record

The evidence above supports a narrower set of decision-relevant questions than a generalized claim that wireless radiation has already been proven dangerous. For purposes of this RFI, the following are the clearest areas for federal evaluation:

- Current evidence synthesis: How should FDA/HHS integrate the reassuring human epidemiology, FDA's existing conclusion, NTP, the 2025 animal review, the 2026 Belenki reanalysis and corrigendum, and the 2026 Japan-Korea studies into one transparent evidence map that distinguishes hazard from human risk?

- Animal replication: What adequately powered, pre-registered, blinded design would resolve the remaining NTP-versus-2026 discrepancy, including dose-response, 6 W/kg versus 4 W/kg, modulation, thermal monitoring, pathology review, and raw-data release?
- Exposure relevance: Do current U.S. compliance and testing assumptions capture likely near-body use configurations and maximum localized exposure under modern devices, and what has changed since GAO's 2012 testing recommendation?
- Combined and contemporary exposures: Which questions about simultaneous sources, body-worn devices, Wi-Fi, sub-6 GHz 5G, millimeter-wave systems, beamforming, and time-averaging are already addressed by current standards, and which require additional dosimetry?
- Developmental and reproductive evidence: Which reported experimental effects persist when studies are conducted at human-relevant, carefully temperature-controlled exposures?
- Federal coordination: What health-science information can HHS/FDA provide promptly to FCC's reopened ET Docket No. 13-84, and what longer-term questions should remain in HHS/NIH research planning rather than being conflated with FCC's immediate remand response?
- Public information: Can agencies describe compliance testing, exposure metrics, and simple exposure-choice options without presenting unquantified exposure reduction as proven disease-risk reduction?

7. Closing synthesis

The most defensible reading of the current record is neither categorical reassurance nor categorical alarm. For several heavily studied human outcomes, the evidence is reassuring, and FDA's current position must be taken seriously. The 2026 Japan-Korea studies materially weaken the earlier animal-cancer signal, but they do not reproduce every material feature of NTP's design. At the same time, GAO's testing and reassessment recommendations remain historically unresolved, the D.C. Circuit required a reasoned explanation on specific non-cancer and testing issues, FCC has now reopened that record, and ICNIRP itself identifies dosimetric knowledge gaps relevant to future protection guidance.

A rigorous federal record can acknowledge all of those facts at once. The value of the present HHS RFI is therefore greatest if it produces a transparent accounting of what is known, what has been substantially answered, what remains genuinely uncertain, and which remaining questions are capable of changing exposure assessment or regulatory practice.

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This document intentionally distinguishes established findings, negative evidence, unresolved questions, and administrative-process facts.