



STATE OF WASHINGTON

DEPARTMENT OF HEALTH

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October 21, 2026

Submitted via Regulations.gov (Federal eRulemaking Portal)

Victoria Marshall
Office of the Assistant Secretary for Health
U.S. Department of Health and Human Services
200 Independence Avenue SW
Washington, DC 20201

RE: Docket No. HHS-OASH-2026-0397; Request for Information on Electromagnetic Fields (EMFs), Radiofrequency (RF) Radiation, and Wireless Radiation Exposure, 91 Fed. Reg. 59,792 (Sept. 21, 2026)¹

Dear Ms. Marshall:

Introduction and Position

The Washington State Department of Health (DOH) submits these comments in response to the U.S. Department of Health and Human Services' ("Department" or "HHS") request for information on electromagnetic field, radiofrequency, and wireless radiation exposure. DOH supports this request and appreciates the decision to build an evidence record before proposing changes to exposure standards, surveillance practice, or federal research priorities. The Secretary of HHS' framing is apt: wireless technologies are part of daily life, and the science supporting federal exposure standards should keep pace with them.²

DOH offers one observation that runs through this letter. The questions in this notice are the questions a state health department must answer for its own residents, and Washington has

¹Request for Information on Electromagnetic Fields (EMFs), Radiofrequency (RF) Radiation, and Wireless Radiation Exposure, 91 Fed. Reg. 59,792, <https://www.federalregister.gov/documents/2026/09/21/2026-19252/request-for-information-on-electromagnetic-fields-emfs-radiofrequency-rf-radiation-and-wireless>

²U.S. Dep't of Health & Human Servs., HHS Seeks Public Input on Electromagnetic Fields and Wireless Radiation, <https://www.hhs.gov/press-room/hhs-seeks-public-input-electromagnetic-fields-wireless-radiation.html>

already tried to answer several of them. In 2014, responding to questions from school districts and parents, DOH reviewed fifteen summary documents published between 2000 and March 2014 by eight national and six international health agencies, and published its findings.³ That review has not been updated since. The evidence beneath it has moved considerably in the years since: two federal rodent carcinogenicity studies, a replacement of the international exposure guidelines, a federal appellate remand of the exposure limits themselves, and the first systematic reviews commissioned by the World Health Organization. DOH's public information on non-ionizing radiation webpage states DOH does not have resources available to keep it current.⁴ A federally maintained synthesis is something fifty state health departments cannot each sustain on their own, and its absence is why the public receives inconsistent answers about wireless exposure depending on where they live.

Washington's Interest

DOH's radiation program operates under chapters 70A.388 and 70A.310 RCW, which address nuclear energy, radiation, and uranium mill tailings.⁵ Washington does not set exposure limits for radiofrequency fields; those limits are federal, adopted by the Federal Communications Commission in 1996 on the basis of National Council on Radiation Protection and Measurements recommendations and the ANSI/IEEE C95.1-1992 guidelines.⁶ DOH's role in this subject is therefore not regulatory. It is to answer questions from parents, school districts, local health jurisdictions, Tribal governments, and clinicians whose patients attribute symptoms to wireless exposure. DOH answers them using federal science that it does not produce and cannot independently verify.

That posture shapes what DOH can offer here. DOH does not operate an exposure measurement network, a radiofrequency-specific surveillance system, or a research program on non-ionizing radiation. What DOH does have is direct experience with what the public asks, what a state agency can and cannot answer, and where existing public health data systems would and would not detect a signal if one existed. Those are the subjects on which this letter is most useful, and DOH has tried to be candid about the limitations.

Public Experiences and Reported Potential Adverse Health Effects

Question 2. In your response, please describe which perspective(s) your comments represent: individual consumer, patient, family member, or caregiver; healthcare professional; worker with occupational exposure; ... government; research entity; or another type of organization or perspective.

³Wash. State Dep't of Health, Responding to Wi-Fi Safety Concerns in Our Schools, DOH 320-100 (Jan. 2014, rev. Sept. 2014), <https://doh.wa.gov/sites/default/files/legacy/Documents/Pubs/320-100-WiFiSafetyInSchoolsSept2014Final.pdf>

⁴Wash. State Dep't of Health, Non-Ionizing Radiation, <https://doh.wa.gov/community-and-environment/radiation/non-ionizing-radiation>

⁵Wash. State Dep't of Health, Radiation Statutory Authority and Rule (citing chapters 70A.388 and 70A.310 RCW), <https://doh.wa.gov/community-and-environment/radiation/rule-making-activities/statutory-authority-and-rule>

⁶Fed. Comm'n's Comm'n, Radio Frequency Safety (describing the Commission's Aug. 1, 1996 adoption of NCRP maximum permissible exposure limits and ANSI/IEEE C95.1-1992 SAR limits, the 1.6 W/kg handset limit, and the Nov. 27, 2019 decision maintaining the limits), <https://www.fcc.gov/general/radio-frequency-safety-0>

These comments represent a state government public health agency. They are informed by DOH's prior review of the published health-agency literature, by the department's role in responding to public and local-government inquiries, and by its operational knowledge of Washington's public health surveillance systems.

Question 3. We invite individuals, families, caregivers, healthcare professionals, and organizations to share experiences regarding potential adverse health effects they believe may be associated with exposure to RF/EMFs. ...

Question 4. We invite healthcare professionals, researchers, and public health practitioners to describe observations from clinical practice, occupational settings, or research that may help identify patterns, if any, of reported potential adverse health effects associated with RF/EMF radiation and exposure. ...

DOH has no case series or clinical observations to report, and that absence is itself informative. Washington has no reporting pathway through which a clinician would notify DOH of a symptom attributed to radiofrequency exposure, no case definition that would let such reports be counted consistently, and no exposure data that could be attached to a report if one arrived. A state health department would not detect a pattern of this kind if one existed, and HHS should not read silence from state agencies as evidence of absence.

DOH urges one methodological safeguard. The experiences submitted in response to Question 3 will be real accounts of real symptoms, and they deserve to be treated seriously; DOH's own 2014 review found that studies addressing self-reported electromagnetic sensitivity confirmed the symptoms were genuine while concluding that controlled studies did not find them to be caused by field exposure.⁷ Self-reported experience gathered through an open public docket is subject to selection, recall, and attribution effects that no analysis can correct after the fact. It is a legitimate source of hypotheses and a poor basis for causal inference. DOH asks that HHS say so explicitly when it publishes or characterizes these responses, so that state and local agencies are not later asked to act on a record never designed to support the conclusions drawn from it.

Exposure Standards and Risk Assessment

Question 5. What existing national and international exposure standards, guidelines, or regulatory frameworks should federal health agencies consider when evaluating the potential adverse health effects of human exposure to RF/EMF? ...

Question 6. What scientific evidence exists about potential adverse health effects caused by current exposure limits?

Federal health agencies should consider, at minimum, the FCC's limits at 47 C.F.R. §§ 1.1310 and 2.1093 and the 1.6 W/kg handset specific absorption rate;⁸ the ICNIRP 2020 guidelines, which replaced the 1998 guidelines and set whole-body average restrictions of 0.08 W/kg for the general public and local head-and-torso restrictions of 2 W/kg, derived from thermal thresholds

⁷DOH 320-100, *supra* note 3.

with reduction factors of 50 and 10 respectively;⁹ and IEEE C95.1 in its current form. DOH suggests that the single most valuable analysis HHS could publish is a plain comparison of these frameworks that explains why United States limits, adopted in 1996 on a 1992 consensus basis, differ from the current international guideline. DOH is regularly asked that question.

Question 6 as written asks what evidence exists of effects *caused by* the current limits. DOH reads it as asking whether adverse effects occur at exposures the limits permit, and addresses that evidence below under Existing Evidence. On the standards themselves, DOH notes a development that bears directly on this inquiry. In 2021 the D.C. Circuit remanded the FCC's decision to retain the 1996 limits, holding that the Commission failed to provide a reasoned explanation for its determination that the guidelines adequately protect against harmful effects unrelated to cancer, and identifying unaddressed record evidence on non-cancer effects, children, long-term exposure, testing procedures, and environmental harm.¹⁰ The court took no position on the underlying science. It held that the agency had not explained itself. HHS houses the expert health agencies whose views that explanation requires.

Measuring Human Exposure and Public Health Surveillance

Question 7. What scientific methods are currently available for accurately characterizing individual and population-level RF radiation exposure?

Question 8. What, if any, improvements in exposure assessment methodologies are needed to better evaluate real-world exposure conditions?

Available methods include personal exposimetry, fixed-point and mobile spot measurements, propagation modeling from transmitter registration data, and device compliance testing. Each has a known weakness for the purpose at issue. Compliance testing establishes that a device meets a limit under standardized conditions, including a test separation distance that may not reflect how the device is carried or used. Spot measurements characterize a place rather than a person. Modeling estimates field strength, not absorbed dose. Personal exposimeters come closest but are not standardized across studies, which makes results difficult to compare.

DOH prioritizes one improvement above the rest: a validated, standardized personal exposure assessment protocol, together with a defensible method for estimating cumulative exposure across sources and over time. Nearly every other question in this notice depends on it. Epidemiology cannot resolve a dose-response relationship without exposure measurement, surveillance cannot link an outcome to an exposure that is not recorded, and standards cannot be evaluated against real-world conditions that are not characterized. DOH recommends that HHS treat exposure science as the prerequisite investment rather than one priority among several.

Question 9. What, if any, technical and exposure-related information should be disclosed to consumers, residents, workers, schools, healthcare providers, and local governments?

⁹Int'l Comm'n on Non-Ionizing Radiation Prot., Guidelines for Limiting Exposure to Electromagnetic Fields (100 kHz to 300 GHz), 118 Health Physics 483 (2020), <https://www.icnirp.org/cms/upload/publications/ICNIRPrfgdl2020.pdf>

¹⁰Env't Health Trust v. FCC, No. 20-1025 (D.C. Cir. Aug. 13, 2021), <https://www.govinfo.gov/content/pkg/USCOURTS-caDC-20-01025/pdf/USCOURTS-caDC-20-01025-0.pdf>

DOH answers this from direct experience. What local health jurisdictions and school districts need is not more technical data; it is a federally maintained, plain-language explanation of what the exposure limits mean, what compliance does and does not establish, and what the current state of the evidence is. DOH adds three specifics. First, specific absorption rate values are published in a form that most people cannot interpret and are measured at a test separation distance that should be disclosed alongside the value. Second, when wireless infrastructure is sited near a school, childcare facility, or health care facility, the compliance demonstration should be available in a form a non-engineer can read. Third, disclosure should be paired with a statement of uncertainty. Materials that assert safety without acknowledging open questions are not believed by the people most concerned, and they make the agencies issuing them less credible on everything else.

Question 10. What data sources or surveillance systems currently exist to monitor potential adverse health effects associated with RF radiation exposure? Should additional data sources or surveillance systems be developed? ...

DOH's answer is that the existing systems, in Washington and generally, would not detect the effects this notice is concerned with, and that building new ones before exposure assessment is solved would be an expensive way to generate uninterpretable data. Taking the notice's categories in turn: cancer registries capture incidence reliably but record no exposure information, so they cannot be used for this purpose without an external exposure source to link to, and they do not capture the non-cancer outcomes at issue. Occupational monitoring exists for defined worker groups with elevated exposure and is the most promising existing asset, but it does not reach the general public. Environmental monitoring would require a measurement network that does not exist at any scale. Longitudinal cohort studies are the right instrument scientifically and the slowest and most expensive one. Biomonitoring has no validated biomarker of radiofrequency exposure or effect. Adverse event reporting is built around medical devices, not ambient exposure. Cluster investigations are underpowered by construction and, in DOH's experience, consume substantial staff time while rarely resolving the question that prompted them.

DOH recommends against standing up a radiofrequency-specific surveillance system as a first step. The sequencing that would yield usable information is exposure assessment first, then a feasibility evaluation of whether existing registries and occupational data can be linked to that exposure measure, and only then a decision about new collection.

Question 11. Should exposure assessment or risk evaluation differ for sensitive populations such as those noted below? Please explain. a. children. b. pregnant women. c. older adults. d. individuals with implanted medical devices. e. workers with elevated occupational exposure. ...

Exposure assessment should differ for children, for people with implanted medical devices, and for workers with elevated occupational exposure, though for different reasons. Children warrant separate assessment on exposure grounds rather than demonstrated susceptibility: they begin exposure earlier, accumulate more lifetime exposure, and use devices differently. DOH's 2014 review found that of the summary documents commenting on children, the data did not suggest

greater susceptibility than adults, while noting that few studies had been done.¹¹ That remains a research gap rather than a reassurance. For people with implanted medical devices the question is electromagnetic interference, which is distinct from a health-effects question and is properly handled through device standards. Workers with elevated occupational exposure are the only group whose exposures approach the limits, which makes them both the population most in need of protection and the most informative one to study. DOH has no basis to recommend differential assessment for older adults or for people with preexisting conditions, and is not aware of evidence supporting it.

Existing Evidence

Question 12. What scientific evidence exists regarding potential adverse health effects associated with RF radiation exposure at levels below current federal exposure limits?

The human epidemiology has strengthened toward no association for the most-studied outcomes. The animal evidence remains unresolved. The National Toxicology Program reported clear evidence of carcinogenic activity in male rats, specifically malignant schwannomas of the heart and gliomas of the brain, after whole-body exposure at 900 MHz and specific absorption rates of 1.5 to 6 W/kg,¹² while its companion mouse study found equivocal evidence at every dose and modulation tested.¹³ Those rat exposures were whole-body rather than localized and well above what people receive. The Ramazzini Institute study is the more directly relevant one, because its exposures of 0.001 to 0.1 W/kg fall below the limits; it reported a statistically significant increase in cardiac schwannomas in high-exposure male rats. Germany's Federal Office for Radiation Protection assessed that study and concluded the findings do not provide convincing evidence of a carcinogenic effect, identifying the absence of multiple-testing correction, a control-group tumor incidence of zero against a historical rate of roughly 1.3 to 1.8 percent, and incomplete dosimetry.¹⁴

On the human side, the systematic reviews commissioned by the World Health Organization concluded that near-field exposure from mobile phone use likely does not increase the risk of glioma, meningioma, acoustic neuroma, pituitary tumors, or salivary gland tumors in adults, or of pediatric brain tumors.¹⁵ The International Agency for Research on Cancer classified radiofrequency electromagnetic fields as possibly carcinogenic to humans, Group 2B, in 2011,

¹¹DOH 320-100, supra note 3.

¹²Nat'l Toxicology Program, Toxicology and Carcinogenesis Studies in 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, Technical Report 595 (2018), <https://ntp.niehs.nih.gov/publications/reports/tr/tr595>

¹³Nat'l Toxicology Program, Toxicology and Carcinogenesis Studies in B6C3F1/N Mice Exposed to Whole-Body Radio Frequency Radiation at a Frequency (1,900 MHz) and Modulations (GSM and CDMA) Used by Cell Phones, Technical Report 596 (2018), <https://ntp.niehs.nih.gov/publications/reports/tr/tr596>

¹⁴Bundesamt für Strahlenschutz, Long-Term Study on Whole-Body Exposure of Rats to Mobile Radio Fields (Ramazzini Study) (assessing Falcioni et al., *Envtl. Research* (2018)), <https://www.bfs.de/EN/bfs/science-research/emf/statements/longterm-study-rats-ramazzini.html>

¹⁵Karipidis et al., Response to the Letter from Di Ciaula et al., 196 *Env't Int'l* 109276 (2025) (summarizing the conclusions of the World Health Organization-commissioned systematic review), <https://doi.org/10.1016/j.envint.2025.109276>

on limited evidence for glioma and acoustic neuroma.¹⁶ That classification has not been revisited, but the IARC Advisory Group recommended in 2024 that radiofrequency non-ionizing radiation be re-evaluated as a high priority during 2025 through 2029, citing new human cancer, animal cancer, and mechanistic evidence.¹⁷ DOH draws a practical conclusion from this pattern rather than a scientific one: the disagreements in this field are specific, named, and testable, which means they are resolvable by targeted study rather than by further review of the existing literature.

Question 13. According to scientific evidence, how do the technologies below affect cumulative exposure patterns? a. 5G. b. 6G. c. Wi-Fi. ... k. Communication enabled smart meters.

DOH is not aware of evidence characterizing cumulative population exposure across these eleven technology categories, and considers that absence the substantive answer. The direction of change is understood: exposure has become more distributed, from many more sources, at lower intensity per source. But no measurement program tracks aggregate personal exposure over time, so the net effect of that shift is not quantified. This is an exposure-science question before it is a health-effects question, and DOH recommends HHS treat it as one.

Question 14. What scientific evidence exists regarding potential adverse environmental effects associated with RF radiation?

This subject lies outside DOH's expertise and statutory role, and DOH offers no evidence on it.

Question 15. What types of scientific evidence should be considered when evaluating RF exposure associated with wireless infrastructure? Please comment on: a. proximity to homes, schools, childcare facilities, healthcare facilities, and/or workplaces. b. cumulative neighborhood exposure. c. antenna density. d. small-cell deployment. e. livestock.

DOH suggests three evidentiary priorities. First, measured rather than modeled field levels at the locations listed, because modeled compliance is what siting review produces and measurement is what answers the public's question. Second, cumulative neighborhood exposure from all sources rather than per-site compliance, since per-site review is structurally incapable of detecting an aggregation problem if one exists; WHO has observed that exposure from 5G infrastructure at around 3.5 GHz is similar to that from existing base stations, which makes the aggregate question the pertinent one.¹⁸ Third, and in DOH's view the most important gap, whether wireless infrastructure density is distributed unequally across communities by income, race, or rural status. DOH is not aware of any systematic examination of this question, and it is answerable now using existing federal antenna registration data. It also cuts both ways, and should be framed

¹⁶Int'l Agency for Research on Cancer, IARC Classifies Radiofrequency Electromagnetic Fields as Possibly Carcinogenic to Humans, Press Release No. 208 (May 31, 2011), https://www.iarc.who.int/wp-content/uploads/2018/07/pr208_E.pdf

¹⁷Berrington de González et al., Advisory Group Recommendations on Priorities for the IARC Monographs, 25 Lancet Oncology 546 (2024) (listing non-ionising radiation (radiofrequency) as a high-priority agent for re-evaluation during 2025–2029, citing “new human cancer, animal cancer, and mechanistic evidence”), <https://stacks.cdc.gov/view/cdc/207974>

¹⁸World Health Org., Radiation: 5G Mobile Networks and Health (Feb. 27, 2020), <https://www.who.int/news-room/questions-and-answers/item/radiation-5g-mobile-networks-and-health>

accordingly: dense deployment raises exposure questions, while sparse deployment leaves rural and Tribal communities without the broadband access on which telehealth, emergency notification, and care coordination increasingly depend. Washington has both conditions within its borders, and a federal analysis that examines only one of them will not serve either community well.

Federal Research Priorities

Question 16. What are the highest priority research gaps regarding EMF and RF radiation and public health that the federal health agencies should address?

Question 17. How can federal health agencies improve coordination of EMF and RF radiation research? Please comment on potential roles for federal health agencies including, but not limited to: a. HHS Food and Drug Administration (FDA). b. HHS National Institutes of Health (NIH). c. HHS Centers for Disease Control and Prevention (CDC).

DOH ranks four gaps. Validated personal exposure assessment comes first, for the reasons given above. Second is targeted replication of the animal findings, designed to address the specific methodological objections leveled at them (multiple-testing correction, control-group tumor rates, dosimetric characterization) rather than a further round of literature review. Third are non-cancer outcomes, which the D.C. Circuit identified as the thinnest part of the federal record and which remain the outcomes the public most often raises.¹⁹ Fourth is children's exposure, assessed on exposure grounds rather than on an assumption of differential susceptibility that current evidence does not support.

On coordination, the structural problem is easy to state. NIH funds and conducts the research; CDC and NIOSH hold the surveillance and occupational exposure infrastructure; FDA holds device authority under the electronic product radiation control provisions and the compliance record that goes with it. None of them sets the exposure limits. The agency that does is the FCC, which has stated that it relies on federal health and safety agencies for guidance on health matters. A coordination mechanism confined to HHS components will not resolve a problem between HHS and the FCC. DOH recommends a standing interagency mechanism that includes the FCC and the Department of the Interior, with a defined consultative role for state, local, and Tribal health agencies, and that HHS sequence its own assessment to inform and be informed by the IARC re-evaluation rather than duplicate it.

Additional Information

Question 18. Please identify any additional scientific evidence, technical information, data, or recommendations that federal health agencies should consider when evaluating potential adverse health effects associated with RF/EMF radiation exposure.

DOH offers its 2014 review as a case study rather than as current science, and will make its methodology and the public comments appended to it available to HHS on request. The comments are a useful record of what people actually ask, which is not always what researchers

¹⁹Env't Health Trust v. FCC, supra note 8.

study. The lesson is the one this letter keeps returning to: a state health department can produce a competent synthesis once and cannot keep it current. In the twelve years since Washington produced its own, the guidelines, the animal evidence, the human evidence, the legal posture of the federal limits, and the technology itself have all changed.

DOH also notes the comment period. Thirty days is a short window for state agencies that must coordinate across programs and, in Washington, consult with Tribal governments before submitting. DOH asks that HHS either extend the period or commit to a second opportunity for comment once it publishes a synthesis of the responses, so that state and local agencies can respond to what HHS concludes rather than only to what it asked.

Conclusion

DOH appreciates the Department's willingness to build a record before drafting, and would welcome direct engagement on exposure assessment, surveillance feasibility, and the design of materials that state and local health agencies can use. Please contact Michael Ellsworth, Federal and Regulatory Affairs Director, at michael.ellsworth@doh.wa.gov with any questions about these comments.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Tao Sheng Kwan-Gett MD', with a stylized flourish at the end.

Tao Sheng Kwan-Gett, MD, MPH
State Health Officer

Washington State Department of Health