

October 21, 2026

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

RE: Comments of the Association for Competitive Technology (ACT) on the Request for Information on Electromagnetic Fields (EMFs), Radiofrequency (RF) Radiation, and Wireless Radiation Exposure [Docket No. HHS-OASH-2026-0397]

In response to the request for information (RFI) that the Department of Health and Human Services (HHS) published on September 21, 2026,¹ the Association for Competitive Technology (ACT) submits these comments on electromagnetic fields (EMFs), radiofrequency (RF) radiation, and wireless radiation exposure. The RFI asks about the state of the science on RF/EMF exposure and human health, the standards that govern exposure in the United States and other countries, ways to measure exposure and monitor health outcomes, and where federal research should be directed. ACT welcomes the RFI's goal of helping policymakers separate established evidence from emerging findings and areas of uncertainty, and these comments are written to support that goal.

ACT is a not-for-profit trade association representing the global small business technology developer community.² Our members build software applications and connected devices used in nearly every sector of the economy, including healthcare, education, retail, manufacturing, and the home. Almost all of these products send or receive data over Bluetooth, Wi-Fi, cellular, or satellite links, so the conclusions HHS reaches about RF exposure will affect whether consumers, businesses, schools, and healthcare providers are willing to use them. In response to Question 2, ACT submits these comments on behalf of developers, device makers, and other companies that build, deploy, and use wireless technologies and whose customers include consumers, patients, clinicians, and businesses of every size. As the RFI asks, ACT draws on peer-reviewed studies, findings of federal agencies and of international scientific bodies, and the regulatory frameworks and consensus standards discussed below, with the aim of helping HHS arrive at conclusions that safeguard public health without cutting off access to the wireless products and services that improve it.

¹ U.S. Department of Health and Human Services, *Request for Information on Electromagnetic Fields (EMFs), Radiofrequency (RF) Radiation, and Wireless Radiation Exposure*, 91 Fed. Reg. 59792 (Sept. 21, 2026), <https://www.federalregister.gov/documents/2026/09/21/2026-19252/request-for-information-on-electromagnetic-fields-emfs-radiofrequency-rf-radiation-and-wireless>.

² ACT, About, <https://actonline.org/about>.



1401 K Street, NW, Suite 501
Washington, D.C. 20005



+1 (202) 331 - 2130



www.ACTonline.org



/US-ACT



@ACTonline

I. Wireless Connectivity Delivers Broad Benefits Across the Economy

Small technology companies reach their customers through wireless connections, and the products that ACT members build show how many parts of the economy depend on those connections. Students and teachers use Wi-Fi-connected tablets, laptops, and learning apps at school and at home, and farmers use wireless sensors and connected equipment to monitor soil moisture, irrigation, and livestock. Manufacturers and logistics companies track equipment, inventory, and shipments with wireless sensors and tags, and small retailers and restaurants take orders and payments on wireless point-of-sale devices. At home, consumers use smart home products to manage energy use, security, and appliances, and they rely on phones and wearables to stay in touch, find their way, and track their fitness.

Connected health products, which many ACT members build or support, depend on the same networks. Remote monitoring devices such as blood pressure cuffs, pulse oximeters, and weight scales send readings to care teams over Bluetooth, Wi-Fi, and/or cellular networks, connected insulin pumps and continuous glucose monitors exchange data with phones and readers over wireless links, and pacemakers and defibrillators implanted in the body send heart rhythm and device status data that let clinicians respond to problems without waiting for an office visit. Inside hospitals, patient monitoring uses spectrum that the Federal Communications Commission (FCC) set aside for that purpose through the Wireless Medical Telemetry Service and Medical Body Area Networks, and the Food and Drug Administration (FDA) examines each device's wireless performance, coexistence, and electromagnetic compatibility (EMC) before it can be sold.³ Telehealth also runs over these networks and is now a normal part of care, used for mental health care and for convenient visits for minor illnesses and prescription refills, and it matters most to rural patients and to patients with limited mobility.

Many of the groups the RFI describes as potentially vulnerable gain the most from these technologies. Children use connected devices to learn at school and at home, and young people with type 1 diabetes depend on continuous glucose monitoring to stay safe overnight and during the school day. Older adults use video calls and messaging to stay close to family, smart home and voice-controlled devices to live independently, and connected devices to manage chronic illness and to get help after a fall. People with disabilities rely on accessibility features in phones, tablets, and wearables, such as screen readers, live captioning, and hearing devices that stream audio over Bluetooth, and remote monitoring helps both expectant mothers with hypertensive disorders and patients with implanted cardiac devices. Medical societies have built these health benefits into their guidance, with the American Diabetes Association recommending that young people with type 1 diabetes be offered continuous glucose monitoring and the major heart rhythm societies treating remote monitoring as standard care for people with implanted cardiac devices.⁴ Congress has

³ U.S. Food and Drug Administration, *Radio Frequency Wireless Technology in Medical Devices, Guidance for Industry and Food and Drug Administration Staff* (Aug. 2013), <https://www.fda.gov/regulatory-information/search-fda-guidance-documents/radio-frequency-wireless-technology-medical-devices-guidance-industry-and-fda-staff>; U.S. Food and Drug Administration, *Electromagnetic Compatibility (EMC) of Medical Devices, Guidance for Industry and Food and Drug Administration Staff* (June 2022), <https://www.fda.gov/regulatory-information/search-fda-guidance-documents/electromagnetic-compatibility-emc-medical-devices>.

⁴ American Diabetes Association Professional Practice Committee, *14. Children and Adolescents: Standards of Care in Diabetes—2026*, 49 Diabetes Care S297 (Supp. 1 2026), <https://doi.org/10.2337/dc26-S014>; Amy M. Ferrick et al., *2023 HRS/EHRA/APHRS/LAHR Expert Consensus Statement on Practical Management of*

shown interest in wider access to wearable technology as well, including in the WEAR IT Act (H.R. 4203), a bill that would let patients pay for certain wearable devices with health savings accounts and other tax-advantaged accounts.⁵

Every recommendation that results from the RFI should account for these benefits and for the value that wireless technology provides across the economy. Discouraging people from using connected devices that are medically indicated would create health costs of its own, and casting doubt on wireless products in general would slow adoption of tools that consumers and businesses depend on.

II. Federal Conclusions Should Follow the Weight of the Scientific Evidence (Questions 6 and 12)

The RFI is right to ask commenters to keep established evidence clearly apart from emerging findings and open questions. The established science shows that RF energy heats body tissue when its intensity is high enough, and that the exposure limits used in the United States and abroad sit well below the point where that heating happens. Researchers have examined the health effects of RF exposure for decades, making it one of the most studied subjects in environmental health.

When FDA reviewed the research published between 2008 and 2018, it concluded in 2020 that there was insufficient evidence to support a causal association between RF exposure and tumor formation, noting the lack of (i) a clear dose-response relationship, (ii) consistent findings, and (iii) a plausible biological mechanism.⁶ Later systematic reviews that the World Health Organization (WHO) commissioned came to similar conclusions about cancer and self-reported symptoms, as described below, and other expert bodies agree, among them the European Commission's Scientific Committee on Health, Environmental and Emerging Risks (SCHEER).⁷ While in 2011 the International Agency for Research on Cancer placed RF fields in Group 2B as possibly carcinogenic, mainly because of limited evidence from case-control studies, a larger and newer body of research reviewed since that time has not confirmed the associations those studies pointed to.⁸

Taken together, the existing body of evidence does not show adverse health effects from exposure at or below current limits. FDA concluded in its 2020 review that epidemiological and cancer incidence data still support its position that exposures within the current cell phone limits produce no quantifiable adverse health effects in people. A 2024 WHO-commissioned systematic review of

the Remote Device Clinic, 20 Heart Rhythm e92 (2023), [https://www.heartrhythmjournal.com/article/S1547-5271\(23\)02011-8/fulltext](https://www.heartrhythmjournal.com/article/S1547-5271(23)02011-8/fulltext).

⁵ Wearable Equipment Adoption and Reinforcement and Investment in Technology (WEAR IT) Act, H.R. 4203, 119th Cong. (2025), <https://www.congress.gov/119/bills/hr4203/BILLS-119hr4203ih.htm>.

⁶ U.S. Food and Drug Administration, Center for Devices and Radiological Health, *Review of Published Literature between 2008 and 2018 of Relevance to Radiofrequency Radiation and Cancer* (Feb. 2020), <https://www.fda.gov/media/135043/download>.

⁷ Scientific Committee on Health, Environmental and Emerging Risks, *Final Opinion on the need of a revision of the annexes in Council Recommendation 1999/519/EC and Directive 2013/35/EU, in view of the latest scientific evidence available with regard to radiofrequency (100kHz - 300GHz)* (Apr. 18, 2023), https://health.ec.europa.eu/system/files/2023-06/scheer_o_044.pdf.

⁸ See Ken Karipidis et al., *The effect of exposure to radiofrequency fields on cancer risk in the general and working population: A systematic review of human observational studies – Part I: Most researched outcomes*, 191 *Environment International* 108983 (2024), <https://doi.org/10.1016/j.envint.2024.108983>.

observational studies in humans reported, with moderate certainty, that RF exposure from mobile phone use likely does not raise brain cancer risk for adults or children, including with long-term use, and it found no link between childhood leukemia or pediatric brain tumors and exposure from base stations or broadcast antennas.⁹ Results from the COSMOS prospective cohort study showed no association between brain tumors and cumulative call time, and the CEFALO study showed none between brain tumors in children and adolescents and their mobile phone use.¹⁰ Brain cancer rates have also held steady over the decades in which mobile phone use became nearly universal, a trend consistent with these findings.¹¹

When weighing comments that cite the 2018 rodent studies of the National Toxicology Program (NTP), HHS should take account of the exposure conditions behind them. The rats in those studies were exposed over their entire bodies for roughly nine hours each day, at specific absorption rate (SAR) levels as high as 6 watts per kilogram, which is many times greater than the public whole-body limit, and FDA's 2020 review took the studies into account and left its conclusions for humans unchanged.¹² Researchers in Japan and the Republic of Korea ran two-year studies built to test the main NTP findings and could not replicate those findings, and Germany's Federal Office for Radiation Protection has pointed to thermal stress from the high exposures as a possible explanation for the NTP results.¹³

Detecting a biological response is not the same as showing harm to health, and the individual studies reporting low-exposure biological effects have not been reliably replicated. HHS should evaluate studies of this kind through the structured methods discussed in Section III, with attention to blinding, dosimetry, independent replication, and dose-response, instead of treating any one study on its own as proof of harm.

III. HHS Should Use Structured and Transparent Review Methods

ACT recommends that HHS review the evidence through structured, transparent methods of the kind called for by the Information Quality Act and Executive Order 14303 on Restoring Gold Standard

⁹ Karipidis et al., *supra* note 8.

¹⁰ Maria Feychting et al., *Mobile phone use and brain tumour risk – COSMOS, a prospective cohort study*, 185 *Environment International* 108552 (2024), <https://doi.org/10.1016/j.envint.2024.108552>; Denis Aydin et al., *Mobile phone use and brain tumors in children and adolescents: a multicenter case-control study*, 103 *Journal of the National Cancer Institute* 1264 (2011), <https://doi.org/10.1093/jnci/djr244>.

¹¹ National Cancer Institute, *Cell Phones and Cancer Risk Fact Sheet* (reviewed Apr. 4, 2024), <https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet> (describing stable U.S. brain tumor incidence and the results of the COSMOS and CEFALO studies).

¹² National 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*, NTP TR 595 (Nov. 2018); see FDA, *Review of Published Literature between 2008 and 2018*, *supra* note 6.

¹³ Australian Radiation Protection and Nuclear Safety Agency, *Korean and Japanese studies agree that radiofrequency exposure does not cause cancer in rats* (Jan. 2026), <https://www.arpansa.gov.au/korean-and-japanese-studies-agree-radiofrequency-exposure-does-not-cause-cancer-rats>; Federal Office for Radiation Protection (Germany), *Technical Statement of the Federal Office for Radiation Protection on the Results of the NTP Study*, <https://www.bfs.de/EN/bfs/science-research/emf/statements/ntp-study/ntp-statement.html>.

Science.¹⁴ HHS already applies one such method, the systematic review approach of NTP's Office of Health Assessment and Translation (OHAT), to other environmental health questions.¹⁵ Under approaches like these, each study counts according to its quality, judged by factors such as the accuracy of its exposure assessment, blinding, replication, and consistency with other types of studies, and anyone can trace how HHS arrived at each conclusion. ACT also asks HHS to release its synthesis of the evidence along with its methods and to take public comment on it before making recommendations to policymakers, families, schools, communities, or businesses.

IV. Reported Symptoms and Public Experiences (Questions 3 and 4)

People who report symptoms deserve clinical attention, and the causes of those symptoms deserve study, but accounts gathered without blinding cannot identify what caused a symptom. Double-blind provocation studies keep participants from knowing whether a field is switched on, and in these studies people who describe themselves as sensitive to EMFs have repeatedly failed to detect actual exposure at better than chance levels, with symptoms that did not follow real exposure. The 2024 WHO-commissioned systematic review of 41 experimental studies in humans found (i) that RF exposure had no effect on self-reported symptoms and (ii) that symptoms tracked whether people believed they were exposed rather than whether they actually were.¹⁶

Submissions received under Questions 3 and 4 tell HHS what concerns members of the public have, and ACT recommends that HHS use them for that purpose rather than as evidence that RF exposure produced the reported symptoms, because controlled studies have not established that connection. HHS also should not treat the number of near-identical submissions, which may often be drafted from common templates, as a measure of scientific weight. For problems involving medical devices, such as electromagnetic interference that disrupts how a device works, the MedWatch and Medical Device Reporting systems already allow clinicians, patients, and manufacturers to engage in reporting, and HHS should keep relying on those systems.

V. A Single National Framework Built on Consensus Standards (Question 5)

A. The Existing Federal Framework

RF exposure in the United States has long been governed under a single federal framework. Within it, the FCC sets limits for devices and transmitters with input from federal health agencies and consensus standards bodies, while FDA carries out its responsibilities for electronic product

¹⁴ 44 U.S.C. § 3516 note (Information Quality Act); Exec. Order No. 14303, *Restoring Gold Standard Science*, 90 Fed. Reg. 22601 (May 29, 2025), <https://www.govinfo.gov/content/pkg/FR-2025-05-29/html/2025-09802.htm>.

¹⁵ National Toxicology Program, Office of Health Assessment and Translation, *Handbook for Conducting a Literature-Based Health Assessment Using OHAT Approach for Systematic Review and Evidence Integration* (Mar. 2019).

¹⁶ Xavier Bosch-Capblanch et al., *The effects of radiofrequency electromagnetic fields exposure on human self-reported symptoms: A systematic review of human experimental studies*, 187 *Environment International* 108612 (2024), <https://doi.org/10.1016/j.envint.2024.108612>; see also G. James Rubin et al., *Idiopathic environmental intolerance attributed to electromagnetic fields (formerly "electromagnetic hypersensitivity")*: An updated systematic review of provocation studies, 31 *Bioelectromagnetics* 1 (2010), <https://pubmed.ncbi.nlm.nih.gov/19681059/>.

radiation under the Radiation Control for Health and Safety Act and its medical device authorities.¹⁷ Congress strengthened this national approach by prohibiting state and local governments from regulating where wireless facilities are placed on the basis of RF emissions, so long as the facilities meet the FCC's rules.¹⁸

A uniform national approach that moves the United States closer to the exposure limits and compliance testing standards harmonized internationally would provide consistent information to consumers, patients, and clinicians. It would also allow manufacturers, including makers of medical devices that must satisfy FDA and FCC requirements alike, to build a single product for sale at home and abroad, a benefit that is largest for small companies without the resources to design and test multiple versions of one product. The FCC is now refreshing its record on the RF exposure questions the D.C. Circuit sent back to it, and ACT encourages HHS to coordinate closely with that effort so that the two agencies build one federal record and avoid reaching conflicting conclusions on the same evidence.¹⁹

B. Frameworks and Standards HHS Should Consider

Among the frameworks HHS should consider are the FCC's RF exposure rules, which rest on standards from the National Council on Radiation Protection and Measurements and IEEE, along with the current IEEE standard (IEEE C95.1-2019) and the guidelines the International Commission on Non-Ionizing Radiation Protection (ICNIRP) revised in 2020.²⁰ HHS should likewise consider FDA's guidance on wireless technology and EMC in medical devices, ISO 14117 on the EMC of active implantable cardiac devices, and the consensus standards that govern compliance measurement. IEC/IEEE 62209-1528:2020 sets out how SAR is measured for devices used near the body, IEC/IEEE 63195-1:2022 and IEC/IEEE 63195-2:2022 do the same for absorbed power density above 6 GHz, and IEC 62232:2025 covers exposure assessment near base stations. All of these were developed through open processes led by experts, and all are revised as new evidence becomes available.

Each framework identifies the lowest exposure that causes an established adverse effect and then places its limit far beneath that point. The U.S. whole-body SAR limit for the general public is 0.08 watts per kilogram, which is one-fiftieth of the 4 watts per kilogram level linked to adverse heating effects. The FCC's localized limit of 1.6 watts per kilogram averaged over 1 gram of tissue comes from a 1992 consensus standard, whereas IEEE C95.1-2019 and the ICNIRP guidelines use 2.0 watts per kilogram averaged over 10 grams of tissue. Compliance testing places devices at maximum power and in the positions that yield the highest exposure, although phones and other devices

¹⁷ 47 C.F.R. §§ 1.1307, 1.1310, 2.1091, 2.1093; 21 U.S.C. §§ 360hh–360ss.

¹⁸ 47 U.S.C. § 332(c)(7)(B)(iv).

¹⁹ Federal Communications Commission, Office of Engineering and Technology, *FCC Seeks Comment on RF Exposure Issues Subject to D.C. Circuit Remand in Environmental Health Trust v. FCC*, Public Notice, DA 26-997, ET Docket No. 13-84 (Sept. 17, 2026), <https://docs.fcc.gov/public/attachments/DA-26-997A1.pdf>; *Environmental Health Trust v. FCC*, 9 F.4th 893 (D.C. Cir. 2021).

²⁰ IEEE Std C95.1-2019, *IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz* (2019); International Commission on Non-Ionizing Radiation Protection, *Guidelines for Limiting Exposure to Electromagnetic Fields (100 kHz to 300 GHz)*, 118 Health Physics 483 (2020), <https://www.icnirp.org/en/publications/article/rf-guidelines-2020.html>.

constantly adjust their power and, in everyday use, operate well below maximum permissible levels.²¹

C. Limits, Exposure Reduction, and Classification (Questions 5.n, 5.o, and 5.p)

Nothing in the weight of the evidence calls for tighter exposure limits. Precautionary reductions in the limits would offer no added protection, but they would signal to the public a hazard unsupported by evidence. HHS can contribute most through science, in the form of periodic systematic reviews of the evidence shared with the FCC and the public. ACT supports bringing U.S. standards and compliance testing methods into line with the international consensus standards discussed above, including eventually conforming the FCC's localized limit to the IEEE and ICNIRP limit and quickly incorporating updated measurement standards into federal compliance requirements. Changes to the limits themselves should continue to come through FCC notice-and-comment rulemaking with input from the federal health agencies, and Section VI addresses disclosure requirements.

As for Question 5.o, today's wireless technologies limit exposure by design, because devices use only as much power as they need to keep a connection and denser networks allow devices and base stations alike to use less power. Given that no adverse effect has been shown for further reductions to address, ACT sees no basis for federal research into new exposure reduction techniques. Any further exposure research should take on clearly defined questions, for example developing more accurate ways than participant recall to estimate individual exposure in epidemiological studies.

As for Question 5.p, most of the characteristics it lists are already built into the existing dosimetric framework. Up to 6 GHz, limits are stated as SAR, and above that frequency they are stated as power density, which tracks how the body absorbs energy at different frequencies. Averaging times capture duty cycle and exposure duration, compliance testing captures distance from the source and closeness to the body, and FCC procedures require assessment both of simultaneous transmission by several radios in a single device and of the combined exposure where several transmitters share a site. IEEE and ICNIRP also include specific provisions for short and pulsed exposures, and nothing in the evidence indicates that pulsed or modulated signals present different risks from continuous signals at the same time-averaged power. Layering a separate classification system on top of these standards would only repeat what they already do and could confuse the public, regulators, and regulated entities. Should new evidence show that modulation, beamforming, or another characteristic calls for different treatment, HHS should take that evidence to IEEE, ICNIRP, and the FCC for consideration within the existing standards.

VI. Public Communication, Labeling, and Consumer Information (Question 9)

Consumers choosing wireless products, families considering a home monitoring device or a glucose sensor, and patients weighing remote monitoring of an implanted device will all hear what HHS says about RF exposure. ACT asks HHS to base that communication on the weight of the evidence and not to recommend ways to reduce exposure, because doing so would imply a hazard at exposures within current limits that is unsupported by the evidence and could lead patients to forgo medically indicated technology.

²¹ Federal Communications Commission, *Wireless Devices and Health Concerns*, <https://www.fcc.gov/consumers/guides/wireless-devices-and-health-concerns>.

Detailed RF exposure information is already in the hands of consumers, schools, healthcare providers, and local governments. Device SAR values and test results appear in the FCC's equipment authorization records and in product documentation, FCC consumer guidance explains RF exposure, and under FDA's guidance medical device labeling gives clinicians and patients EMC information. The FCC's rules and local permitting processes provide information on whether wireless facilities comply. What makes this information most helpful is an explanation that the limits sit far below the point where any established effect appears.

ACT cautions against requiring new labels, disclosures, or warnings that would suggest a health hazard unsupported by evidence. Requirements of this kind would do nothing to improve public understanding, might cause some patients to refuse or abandon monitoring their clinicians recommended, and would impose compliance costs that weigh most heavily on small device makers and app developers. Federal consumer information should be consistent among agencies and with what WHO and other national health authorities publish, should rest on the weight of the evidence, and should be national in scope so that consumers, patients, and device makers are not caught between conflicting state and local requirements.

VII. Measurement, Data Sources, and Sensitive Populations (Questions 7 to 11)

A. *Methods for Assessing Exposure (Questions 7 and 8)*

A range of mature methods can characterize RF exposure. For devices they include standardized SAR measurement with anatomical models and computational dosimetry, and near base stations they include on-site measurement and modeling under IEC 62232. Personal exposure meters capture exposure over the course of daily activities, and network and device data reveal how long devices transmit and at what power. Exposure assessment is better today than in the early case-control studies, which depended on participants' own reports of their phone use, a recognized source of bias, and the larger, newer studies WHO reviewed include cohort studies free of that bias. ACT also supports ongoing work by the National Institute of Standards and Technology (NIST) and consensus standards bodies on measurement at higher frequencies, at which exposure is expressed as power density at the surface of the body.

B. *Existing Data Sources and Surveillance Systems (Question 10)*

HHS's monitoring needs can be met through existing systems without creating new ones, as the discussion below of each data source in Question 10 shows.

1. **Disease registries.** Cancer incidence is tracked over time by the National Cancer Institute's Surveillance, Epidemiology, and End Results Program and by the National Program of Cancer Registries of the Centers for Disease Control and Prevention (CDC), and these registries have shown brain cancer incidence holding steady while wireless technology use has grown.
2. **Occupational monitoring.** Workers who may face higher RF levels, including those working close to broadcast and telecommunications antennas, are already covered by existing occupational safety programs.
3. **Environmental monitoring.** Monitoring near base stations is a well-established practice, and measurement surveys generally find public exposures far below the limits.

4. **Longitudinal cohort studies.** New cohorts would be expensive and take years to produce results, and international cohort studies already supply this kind of evidence, so HHS should draw on those studies instead of funding new ones.
5. **Biomonitoring.** RF energy is non-ionizing and leaves behind no biomarker or chemical residue in the body to measure, so biomonitoring does not fit RF exposure.
6. **Adverse event reporting.** Medical device problems such as electromagnetic interference are already captured by the Medical Device Reporting regulations and MedWatch, whereas a new system for reporting general symptoms blamed on RF exposure would gather unverified attributions that cannot support conclusions about cause.
7. **Disease or illness clusters.** Cluster reports are vulnerable to chance findings and selection effects, so any investigation of one should use CDC's established methods for cluster assessment.

C. Sensitive Populations (Question 11)

Because the limits are set to protect the entire public, they cover older adults, children, pregnant women, and people with health conditions, and their reduction factors allow for variation among individuals. The standards bodies have taken research on how children absorb RF energy into account, and ACT recommends that HHS continue to assess how these groups are exposed using the existing framework, and that it also consider the benefits that connected technologies bring them, as Section I describes.

In the case of implanted medical devices, the concern that matters is electromagnetic interference with how the device works. That concern is already addressed by FDA's review of device EMC, by consensus standards such as ISO 14117, by manufacturers' testing against the electromagnetic emissions devices commonly encounter, and by labeling that explains safe use to patients and clinicians. Remote monitoring over wireless links is now routine for people with implanted cardiac devices. Workers with elevated occupational exposure are appropriately covered by existing workplace safety programs and the FCC's limits for occupational exposure.

VIII. New Technologies, the Environment, and Wireless Infrastructure (Questions 13 to 15)

A. Technologies and Cumulative Exposure (Question 13)

New and evolving technologies should be judged against the applicable regulatory limits using established measurement methods, and on the basis of the RF exposure they actually produce rather than technology-generation labels like 5G or 6G. Each technology named in Question 13 spans many frequencies, power levels, antenna configurations, beamforming, operating modes, network loading, timing, and use cases, and internet of things and smart home devices by themselves rely on protocols that run from Bluetooth to Wi-Fi to cellular. Moreover, every device and transmitter using a particular spectrum technology has to meet the exposure limits individually, and sites hosting several transmitters are evaluated for their combined exposure.

Devices held against or worn on the body account for most of the RF exposure people receive, which is why near-field and localized measurement methods such as IEC/IEEE 62209-1528 are most important for phones and wearables, while distant infrastructure and satellites contribute far less. ICNIRP's 2020 guidelines expressly cover 5G networks, including those using millimeter-wave frequencies, and those networks are subject to the same limits, and any frequencies or waveforms that future networks such as 6G introduce will be as well, with the FCC and the consensus standards bodies able to assess those technologies through their existing processes as they are developed and deployed. Energy at millimeter-wave frequencies is absorbed in the skin's outer layers, so the limits for those frequencies are stated as power density, and networks of closely spaced small cells let both base stations and devices transmit with less power.

Wearables, smart home products, smart meters, Wi-Fi equipment, and internet of things devices run at low power and frequently transmit only some of the time,²² so their exposure is best measured over time based on how each device really operates, including its distance from the user, duty cycle, and frequency band, because Wi-Fi equipment and many other devices can operate across several bands. Wireless medical devices must comply with FCC exposure rules and undergo FDA review, and those using the bands reserved for medical use are designed to run at low power. ACT urges HHS not to assume that more wireless devices means a matching rise in exposure, because newer technologies frequently lower the power each device needs to transmit.

B. Environmental Effects (Question 14)

Questions of ecology and agriculture fall outside ACT's expertise in technology and the companies that develop it, so ACT defers to commenters with that expertise on Question 14 and Question 15.e. ACT notes that the environmental issues remanded by the D.C. Circuit are now under FCC review, and it asks HHS to hold environmental studies to the same standards of quality, dosimetry, and replication it uses when reviewing research on human health. One recent systematic map of the environmental research found that the studies reporting harm to plants and animals were of poor quality and that good-quality studies found no adverse effects.²³

C. Wireless Infrastructure (Question 15)

Because RF exposure from infrastructure falls quickly with distance and antennas point in particular directions, ground-level exposure near workplaces, homes, schools, childcare facilities, and healthcare facilities is usually a small fraction of the limits. Distance is a poor stand-in for exposure, which makes measurement of each installation under IEC 62232 a sounder basis for evaluating a site than rules based on distance. Compliance is evaluated for the total exposure at each site, including sites with many antennas or with small cells.

Dependable wireless infrastructure is itself good for health, because hospitals and clinics count on strong, dependable coverage to monitor patients, coordinate care, and handle emergency

²² See Centers for Disease Control and Prevention, *Facts About Wearable Technology* (describing wearables as using low-powered RF transmitters that expose users to RF levels below applicable exposure limits), <https://www.cdc.gov/radiation-health/data-research/facts-stats/wearable-technology.html>.

²³ Australian Radiation Protection and Nuclear Safety Agency, *Good quality research shows no environmental effects from radio waves* (Aug. 22, 2024), <https://www.arpansa.gov.au/good-quality-research-shows-no-environmental-effects-radio-waves>.

communications, and telehealth and remote monitoring for patients in rural and underserved areas run over wireless networks. Businesses, schools, and public services in the same communities depend on that infrastructure as well, and ACT asks HHS to factor in these benefits whenever it looks at deploying infrastructure near healthcare facilities and in the surrounding communities.

IX. Research Priorities and Federal Coordination (Questions 16 and 17)

A. Targeted Research (Question 16)

The RFI's questions about health effects within current limits have already received extensive study, including in the research FDA and WHO reviewed. Launching a new federal research program on them would signal to the public an uncertainty unsupported by the evidence and would pull money away from health research offering greater benefit. ACT recommends that HHS rely instead on the existing body of evidence and confine any federal work in this area to targeted projects such as the following.

1. Helping NIST and consensus standards bodies develop ways to measure exposure and test compliance at higher frequencies and for wearable and implanted devices, including personal dosimeters covering the 5G bands.
2. Carrying out periodic systematic reviews of the existing evidence under preregistered protocols, building on WHO's commissioned reviews, along with continued cancer surveillance using existing registries.
3. Investigating the causes of symptoms people attribute to RF exposure, which could help those individuals get effective care and help HHS explain RF exposure more clearly to the public.
4. Studying EMC and wireless coexistence for medical devices operating in increasingly crowded spectrum, an issue that bears directly on patient safety.
5. Quantifying what connected care does for patient health, which would let HHS compare any recommendation on exposure with the effect it would have on patients' access to care.

B. Coordination Among Federal Agencies (Question 17)

Agency roles should follow each agency's existing authority and expertise. ACT recommends that FDA's Center for Devices and Radiological Health remain HHS's lead on electronic product radiation and on how medical devices perform wirelessly, including their EMC, while continuing to advise the FCC on the science. The National Institutes of Health (NIH), through the National Institute of Environmental Health Sciences, NTP, and the National Cancer Institute, should assess the existing evidence using the systematic review methods from Section III, and any research that NIH funds should use exposure systems that have been validated, with documented dosimetry and temperature control, and should test exposure levels that reflect real-world conditions. CDC should help analyze the data in existing registries, apply its established methods when it looks into any reported cluster, and make sure its public materials line up with what FDA and the international scientific bodies have concluded.

Within the federal government, HHS should work through one interagency process with the FCC, NIST, the Occupational Safety and Health Administration, and the National Telecommunications and Information Administration. HHS should also back continued U.S. participation in ICNIRP, the WHO International EMF Project, and the IEEE International Committee on Electromagnetic Safety, and should put any research plans out for public comment before committing funds.

X. Additional Information (Question 18)

In addition, ACT asks HHS to take into account the health risk assessment of RF exposure that WHO is now conducting, which builds on the systematic reviews WHO commissioned, together with the findings of other national authorities that have examined the same body of evidence. HHS should give full weight to the benefits of the connected technologies discussed in these comments, health benefits among them, and should publish its findings and methods for public comment before issuing recommendations that could change how consumers, patients, families, schools, healthcare providers, and businesses use wireless technology.

XI. Conclusion

ACT appreciates the opportunity to comment on the RFI and urges HHS to take these recommendations into account in its review of the RF/EMF evidence. ACT looks forward to continued work with HHS and other stakeholders and would welcome the chance to discuss these recommendations in more detail, including how public-facing materials on RF exposure could affect the use of connected technologies, including connected health technologies, by consumers and patients.

Sincerely,



Brian Scarpelli
Senior Global Policy Counsel
Association for Competitive Technology (ACT)

Chapin Gregor
Policy Counsel
Association for Competitive Technology (ACT)
1401 K St NW (Ste 501)
Washington, DC 20005