

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Request for Information on Electromagnetic Fields (EMFs), Radiofrequency (RF) Radiation, and Wireless Radiation Exposure

Docket No. HHS-OASH-2026-0397

Comment of James Chrystopher Lech · 30 September 2026

Correspondence: autismintelligenceearth@gmail.com · ORCID: <https://orcid.org/0000-0001-9919-0120>

Question 2 — Perspective

Perspectives: independent scientist and research entity; science diplomat and national reporter to the WHO International EMF Project; applied R&D in exposure characterization, environmental configuration, clinical-trial protocol design, and AI/ML-assisted evidence synthesis. Not filing on behalf of WHO, SANDF, ESA, NRF, ICNIRP, VU Amsterdam, or any government.

From 2015 the South African National Research Foundation funded doctoral research on non-ionizing radiation, including non-native electromagnetic fields and optical radiation. In February 2021 NRF nominated the commenter to WHO non-ionizing radiation reporting. The commenter served as Diplomatic Science Officer for the WHO International EMF Project and Optical Radiation — South Africa, and authored the 2021 and 2022 South Africa national reports to the International Advisory Committee. In June 2022 the National Assembly House Chairperson for Committees referred the 2022 report to the Portfolio Committees on Health, Agriculture, and Environment.

In August 2019 Dr Eric van Rongen, then Chairman of ICNIRP and Senior Scientific Staff Member of the Health Council of the Netherlands, recommended that a summary of this EMF and optical-radiation research be included in the Netherlands' annual report to the WHO International EMF Project, and suggested a guest invitation to the International Advisory Committee. That correspondence identified the transition band between electromagnetic fields and optical radiation as poorly mapped.

Further professional engagement, in personal or institutional capacity: Lt Gen A.P. Sedibe, then Surgeon General, SANDF (2018 briefing on non-native EMF and mitochondrial performance); Dr Rune Floberghagen, ESA Directorate of Earth Observation Programmes (methods and TRL review); Dr Stephanie Seneff, MIT CSAIL; Dr László G. Boros; former U.S. Ambassador Claire Pierangelo (2023 mission technical discussion); Ivan Čuljak (former OPCW inspector; 2022 WHO EMF ZA subcommittee); Charles Collins, Together We Grow AZ (applied low-EMF regenerative environments); Prof. Gijs Wuite, VU Amsterdam (doctoral supervision); Prof. Michael Kundi, Medical University of Vienna (2017 public-health doctoral eligibility). Immigration and internal-military letters are not attached. Redacted references: request via OASH-RFI@hhs.gov.

In October 2020 the commenter received the Dutch Hacking Health Award, Amsterdam Champion, for a solution addressing sleep problems and neurological disorders by changing technology and environmental configurations from disruptive to constructive setups. Reported demonstration effects included sleep, insomnia, mood, learning, and performance. That award is a hackathon/impact demonstration, not a multi-site RCT.

Selected peer-reviewed work (ORCID 0000-0001-9919-0120): Lech et al., BIOHACK protocol, BMJ Open 2023;13:e071078 (PMID 37586862) — first-author protocol of a randomised proof-of-concept trial on biomodulation after arthroscopic rotator-cuff repair; outcomes not yet published. Lech et al., Fiat Lux: Light and Pedagogy for the 21st Century, Ann Neurosciences 2023 (with M.R. Hamblin). Co-authored experimental and observational papers on 5 GHz MIMO combined exposures and on digital screen-time epidemiology. 2017 Rhodes University MSc: Constructing an EMF radiation HYGEIA framework and model to demonstrate a public interest override (overlay simulation of multi-source hazard zones).

This comment is not a procurement bid and not a USRAP filing. Source basis: government reports; institutional correspondence; peer-reviewed protocol and papers.

Question 3 — Experiences

This is not a clinic-record submission. No patient identifiers or imaging files are attached.

Relevant experience is multi-country implementation in which wireless, lighting, water, and built-environment variables were treated as design configurations rather than as a single radiation argument: Netherlands (social housing / OurDomain photon-flux lighting changes; Dutch Hacking Health Amsterdam Champion 2020 demonstration on sleep and neurological-function configurations; Amsterdam Police district 2020 written intent to explore officer-recovery research — intent, not a completed trial); Réunion / Manapany (spectrometer-based lighting versus colour-temperature standards; Wi-Fi reconfiguration); South Africa Western Cape estate (external lighting-model comparison); United States Arizona regenerative-agriculture collaboration; mainland France surgical-research setting through the BIOHACK protocol. Amsterdam UMC collaboration described in the 2022 WHO ZA report was aimed at quantifying environmental interventions with methods available in that lab; that sentence is not a claim of a finished UMC outcomes trial.

Two classes of configuration were compared in practice. Disruptive: high duty-cycle multi-source indoor fields and lighting installed without time-activity or sensitive-receptor design, each device treated as compliant in isolation. Constructive: duty cycle and distance managed; wired-first or scheduled-wireless defaults where function allows; optical spectrum and flicker treated as part of the same non-ionizing envelope; occupants able to reduce load and observe change.

Reported changes when configuration changed (sleep timing, communal energy use, plant/microclimate response, user function) are hypothesis-generating field observations. They are not offered as proof of one disease mechanism. Institutions asked for operable design rules. That is the request to HHS.

Source basis: field observation; WHO EMF Project ZA national reports 2021 and 2022 (cited, not attached); peer-reviewed protocol.

Question 4 — Professional observations

Patterns: occupant complaints often track indoor multi-source load and night-time envelope, not only a distant tower. Optical radiation (spectrum, flicker, timing) is omitted from RF-only assessments even though ICNIRP's remit includes the EMF–optical transition. Occupational groups lack comparable exposure characterization. Reported intolerance presentations are heterogeneous and need a case definition plus exposure log before either psychogenic or injury attribution.

The 2020 Dutch Hacking Health Amsterdam Champion demonstration applied the same logic in a public innovation setting: change configuration, then observe sleep, insomnia, mood, learning, and performance. BIOHACK (BMJ Open 2023) is the later hospital-protocol version of moving from argument to a testable constructive optical/biomodulation setup after surgery. BIOHACK outcomes are not yet published.

Source basis: field observation; peer-reviewed protocol; WHO ZA 2022.

Question 5 — Standards

Compare FCC operational limits; IEEE C95.1; ICNIRP RF and optical guidelines; IARC 2B; NTP; WHO International EMF Project national reports; selected more precautionary national limits.

The 2021 and 2022 South Africa WHO IAC reports recommended starting public and regulatory understanding with LIGHT (visible and invisible optical radiation), then RF/EMF in the same envelope, with priority on bioadaptive configurations rather than complaint-only narratives. Electrical-engineering metrics that maximize watts-to-lumen or device-level SAR are not equivalent to biological metrics that count bands, ratios, timing, duty cycle, and co-fields (optical, RF, ELF magnetic). An energy-flux configuration can look efficient on a utility bill or a compliance certificate and still be a poor biological envelope. A photon-flux / field-configuration approach asks which quanta reach tissue and ecosystems, and what changes when the setup changes.

Classification systems should include the fields listed in the RFI plus optical spectrum, flicker, night-time dose, and ELF magnetic co-exposure. Fund tests of constructive defaults that keep connectivity.

Source basis: WHO ZA 2021–2022; van Rongen 2019; FCC/ICNIRP/IEEE texts.

Questions 6–9 — Limits, measurement, disclosure

Q6. The commenter does not assert that current FCC limits are proven safe or proven unsafe in one sentence. Heating-based limits address known thermal injury. They do not describe multi-source, time-patterned, optical-plus-RF envelopes below heating thresholds. That is a methods gap.

Q7–8. Use exposimeters, inventories, time-activity, paired spectrometer and RF surveys, occupational dosimetry. Improve by pairing RF and optical measurements; recording duty cycle and night-time load; using child and implant geometry; distinguishing energy-flux compliance from photon-flux / configuration description.

Q9. Disclose to consumers, schools, clinicians, workers, and local governments: bands and simultaneous sources; time-average and peak; duty cycle; distance assumptions; lighting spectrum and flicker class; how to request measurement; implant/EMC contacts. Do not disclose only a phone-box SAR.

Source basis: standard survey practice; WHO ZA 2022 field methods.

Questions 10–12 — Surveillance, sensitive groups, below-limit evidence

Q10. Current registries do not capture RF/optical configuration. Add clinician exposure-history fields; occupational pilots; optional school lighting-plus-RF walkthroughs; cluster protocols that require measurement before attribution.

Q11. Assessment should differ for children, pregnancy, older adults, implanted devices, high occupational load, and people with sleep, neurological, or reported-intolerance presentations. Start with configuration and differential work-up, not with a prior that the presentation is either entirely psychogenic or entirely proven injury.

Q12. Below-limit and non-thermal literature is heterogeneous. Map it with quality and conflict-of-interest codes. Include optical and ELF magnetic co-exposure in the same map. The commenter's 5 GHz MIMO plus CT animal work is experimental design evidence, not a human 5G verdict.

Source basis: mixed peer-reviewed record; WHO ZA reports; ORCID-listed papers.

Questions 13–15 — Cumulative technologies, environment, infrastructure

Indoor Wi-Fi, IoT, wearables, and lighting duty cycle often dominate personal dose. 5G/6G and small cells add neighborhood density and beamforming variability; measure, do not assume. Satellite and

vehicle links are usually smaller for the occupant than indoor sources — still measure. Wireless medical devices require FDA EMC plus occupant-load context. Smart-meter issues are placement and duty cycle near sleep spaces.

Device-level or single-layer compliance is not a cumulative assessment. The 2017 Rhodes MSc HYGEIA model ran forecast simulations against real spatial intersections: layers that appear acceptable in isolation can produce a hazard zone when overlaid; outputs vary by demographic and facility type. Combined ionizing and non-ionizing load was examined in Obajuluwa, Lech et al., Egypt. J. Basic Appl. Sci. 2023 (5 GHz MIMO + CT in rats). That is a methods warning, not a human-hospital verdict. Regional magnetospheric context (including South Atlantic Anomaly muon-flux measurements reported by Augusto et al.) is a boundary condition operators already use for satellites; it is not offered here as the sole cause of chronic disease.

Lighting belongs in the cumulative envelope even though it is not named in every RFI bullet. An energy-flux LED retrofit can cut watts and worsen flicker and night-time blue-weighted dose. A photon-flux configuration aims at band ratios and timing that support circadian and plant/animal function at lower energy input. WHO ZA 2022 records demonstration observations (NL communal lighting and energy/sleep reports; Western Cape five-day vegetation contrast under two lighting models, same irrigation). Those are demonstrations for U.S. replication, not U.S. rules.

Q14–15. Include insects, vegetation, livestock, and night-sky/wildlife lighting. For infrastructure: proximity to schools and clinics, antenna density, small-cell clustering, and indoor source density. Constructive default: measure first; reduce redundant indoor transmitters; fix the lighting envelope; keep service.

Source basis: WHO ZA 2022; field observation.

Question 16 — Priority research gaps

- Real-world cumulative multi-source dosimetry, including children, pregnancy, implants, and occupational dense-use settings.
- EMF–optical transition and combined indoor envelopes (RF + lighting flicker/spectrum + duty cycle + ELF magnetic), flagged in 2019 ICNIRP-chair correspondence.
- Independent replication of key animal and mechanistic findings below thermal limits, pre-registered.
- Prospective human studies with measured exposure.
- Case definition and differential pathway for reported intolerance presentations.
- Bias-audited evidence maps: pre-registered inclusion, COI coding, human-in-the-loop AI/ML screening, reproducibility pack. AI curates; it does not adjudicate.
- Policy-simulation layer: exposure, function, energy cost, and infrastructure cost under constructive defaults versus status quo.
- Constructive-configuration trials, of which BIOHACK is one hospital-protocol example awaiting outcomes.

HHS needs a ranked gap list and a measure–reconfigure–measure loop, not another infinite argument.

Question 17 — FDA, NIH, CDC

NIH/NIEHS/NTP: mechanisms, independent toxicology, evidence-map infrastructure. FDA: wireless medical devices, implant EMC, labeling a clinician can use. CDC/NCEH/NIOSH: case definitions, occupational monitoring, cluster methods, exposure-history instruments. OASH: synthesis and coordination.

The commenter is available for a technical briefing and, if asked, to contribute draft instruments to a joint working group. That does not replace statutory roles.

Question 18 — Additional recommendations and offer

Work products available to staff after this RFI (written; no procurement implied):

- Bias-audited AI/ML evidence-synthesis protocol.
- Cumulative-exposure / configuration simulation with stated assumptions and prohibited claims.
- Constructive-configuration playbook (duty cycle, distance, wired-first defaults, lighting envelope, before/after measures).
- Photon-flux versus energy-flux technical note: what would change in school, housing, and occupational specs; what must be replicated under U.S. protocols before any specification change.
- Surveillance / clinical-observation instrument without PHI.
- Staff briefing, 60–90 minutes. Contact: autismintelligenceearth@gmail.com via OASH-RFI@hhs.gov. ORCID 0000-0001-9919-0120.

Do not adopt the 2021 or 2022 South Africa WHO reports as U.S. rules. Test the configuration claim with U.S. measurement protocols. Update configurations so institutions can move while the literature remains contested.

Respectfully submitted,

James Christopher Lech

autismintelligenceearth@gmail.com

ORCID: <https://orcid.org/0000-0001-9919-0120>

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