October 20, 2026

U.S. Department of Health and Human Services
Office of the Assistant Secretary for Health
Docket HHS-OASH-2026-0397

Re: Request for Information on Electromagnetic Fields, Radiofrequency Radiation, and Wireless Radiation Exposure

Healthcare professional response • Questions 2, 5, 6, 11, 12, 16, 17, and 18

Dear Department of Health and Human Services Officials:

I write this letter to urge the Department of Health and Human Services and the Federal Communications Commission to revisit the “safety standards” that govern exposure to wireless communication equipment and the construction and placement of wireless infrastructure. These standards have their origins in ANSI guidance and the subsequent work of the IEEE (Institute of Electrical and Electronics Engineers). Their foundation rests on literature and studies from the 1970s and early 1980s, and their thermal basis remains essentially unchanged. Central to this history are the operant behavior studies of de Lorge at the Naval Aerospace Medical Research Laboratory. These studies used small numbers of monkeys and rats exposed to microwave radiation until their core body temperature rose enough to disrupt learned behavior. A safety factor was then applied. The resulting approach focused on the thermal, or heating, effects of microwave radiation. In my view, this leaves the non-thermal effects inadequately addressed. The continued reliance on this early work is unfortunate, especially when other nations have adopted more precautionary approaches to safeguarding their citizens.

The areas of concern include cancer, cardiac abnormalities, diabetes, neurological disorders, and electro-hypersensitivity. I will leave the detailed discussion of those subjects to my many colleagues in their respective fields. My reading of the literature has convinced me that microwave radiation causes oxidative stress and that this is a principal pathway through which it causes damage. My comments here will concentrate on the eye.

I am a board-certified ophthalmologist with more than forty years of experience in the field and an MD from Georgetown University in 1982. Much of my professional career has been spent in intraocular surgery, with a special emphasis on the anterior segment of the eye. I also have a longstanding interest in the biological effects of electromagnetic radiation. I offer these comments as a physician expressing my personal opinion based on my clinical experience and reading of the literature.

I am presenting only a minuscule portion of the literature on the ocular effects of electromagnetic radiation. There is a great deal more research that I could cite and discuss, but I have kept these comments brief out of respect for the limited time available to review them.

The eye is a highly specialized sensory organ with neural tissue that is part of the central nervous system. It weighs approximately 10 grams and has a diameter of about 25 millimeters, roughly the diameter of a quarter. The historical CENELEC (European Committee for Electrotechnical Standardization) approach considered the eye's size and its well-known thermal threshold for cataract formation in the rationale for a safety standard of 2 watts per kilogram averaged over 10 grams of contiguous tissue. This included a safety factor of fifty below the specific absorption rate, or SAR, reported to cause cataracts. My concern is that such a thermal model does not adequately address the other ways in which microwave radiation may damage the eye. Let’s see why this is shortsighted.

In an elegant series of studies done by the Applied Physics Laboratory at Johns Hopkins in conjunction with the Wilmer Eye Institute, Kues, Monahan, and their colleagues reported significant effects in a primate model that they interpreted as extending beyond substantial tissue heating. The corneal endothelial layer showed damage readily visible with specular microscopy. As an ophthalmologist, I find injury to this layer particularly concerning because of its essential role in maintaining corneal clarity.

The iris has a barrier function, analogous in purpose to the blood-brain barrier. In these experiments, disruption of the blood-aqueous barrier was demonstrated by leakage of fluorescein dye and even the much larger molecule, horseradish peroxidase. These findings represent a loss of vascular barrier integrity in the eye. To me, they are a clear reason to look beyond cataract formation and gross heating when evaluating ocular safety.

Even more alarming was the effect of pretreatment with two common ophthalmic medications. When timolol was placed on the primate eye before microwave exposure, susceptibility to vascular leakage increased markedly. The investigators described a striking contrast with timolol's stabilizing effect in a thermal injury model. Timolol belongs to the beta-blocker family, a group of drugs used both in ophthalmology and in the treatment of cardiovascular disease. What happens to the blood-brain barrier in people taking a beta blocker who are exposed to non-ionizing radiation? That remains a question that deserves attention. Where is the specific protection for medication-related susceptibility in our exposure standards?

The other drop was pilocarpine, a glaucoma medication also used for the temporary treatment of presbyopia. In other words, some people use this drug in drop form to reduce their need for reading glasses. Again, the investigators reported increased leakage associated with disruption of the normal blood-aqueous barrier. In the drug-pretreatment study, significant ocular effects were reported at an average power density of 1 mW/cm^2, corresponding to a reported SAR of 0.26 W/kg. What are the implications for people using these medications while being exposed to wireless radiation? In my opinion, this is a question our safety framework should address directly.

Even more concerning are the effects the investigators reported in the retina, the neural tissue that converts light into signals transmitted to the brain. Their electroretinographic measurements showed reductions of approximately 60 percent in rod response and 90 percent in cone response under the experimental conditions studied. Rods are important for vision in dim light and peripheral vision; cones provide color vision and fine visual detail. For an ophthalmologist, these are consequential findings. They are central to my conviction that non-thermal microwave exposure is harmful and that a standard centered on heating does not adequately account for this kind of functional disturbance.

The investigators were sufficiently concerned about their findings that the Applied Physics Laboratory adopted its own microwave exposure standard of 0.1 mW/cm^2 for all employees, including those who did not work with microwave-generating equipment. Now for the most striking part of this: the report was published in 1992, thirty-four years ago. The Telecommunications Act was passed in 1996. This work was already available, and it came from a prestigious American institution. In my view, these findings should have prompted a much more protective approach to exposure standards.

I urge HHS and the FCC to work together to revise our exposure guidelines. The review should include physicians and investigators who are not employed or financed by the wireless industry. There are many good people who have devoted their lives to the study of the health and environmental effects of electromagnetic radiation and who would gladly participate. This is not an adversarial situation. We should want government, industry, and concerned citizens to assure great service for all while respecting our safety. We need to move our standards into the twenty-first century and lead the world, not follow.

We can, as individuals and parents, control how and when we use our phones and laptops. We cannot control our environmental exposures. We cannot turn a cell tower off or move it. So we have a situation where antiquated parameters that were inadequate from the start are being used to this day, exposing us and our children in our own homes, against our will, to what many believe is a great health hazard. At the very least, I would urge that we adopt some precautionary measures. Most of the world has actively moved in this direction, and our standards need to be immediately revised.

Respectfully,

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References

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2. Kues HA, Monahan JC, D'Anna SA, McLeod DS, Lutty GA, Koslov S. Increased sensitivity of the non-human primate eye to microwave radiation following ophthalmic drug pretreatment. Bioelectromagnetics. 1992;13(5):379–393. doi:10.1002/bem.2250130505. Source

3. Lin JC. Current Standards and Their Bases for Safe Human Exposure to Radio-Frequency Radiation. Radio Science Bulletin. 2004;309:50–52. Source