

## FACT SHEET

### Scientific Evidence Invalidates Health Assumptions of Government Exposure Limits for Radiofrequency Radiation (RFR): Implications for 5G<sup>1</sup>



INTERNATIONAL COMMISSION ON THE BIOLOGICAL EFFECTS OF ELECTROMAGNETIC FIELDS

Many questions need answers before we move forward with assurance that wireless technologies are safe for human health and the environment.

- Radiofrequency radiation (RFR) exposures are associated with a range of adverse health effects including cardiomyopathy, carcinogenicity, DNA damage, neurological effects, increased permeability of the blood brain barrier and sperm damage.
- Since 2002<sup>2</sup>, multiple robust epidemiologic studies of cell phone radiation have found increased risks for brain tumors<sup>3</sup> which are supported by evidence of carcinogenicity of the same cell types (glial cells and Schwann cells) from animal studies.<sup>4,5</sup>
- Based on very limited research conducted 40 years ago (before most people had cell phones), the Federal Communications Commission (FCC) for the U.S., and the International Commission on Nonionizing Radiation Protection (ICNIRP) for many other countries, determined in the 1990s and again in 2020 that there are no adverse health effects from RFR exposure below the Specific Absorption Rate (SAR) of 4 watts per kilogram (W/kg) for frequencies ranging from 100 kHz to 6 GHz. The assumed safe level is based on a behavioral effect observed in acute studies (up to 1 hour) conducted with small numbers of rats and monkeys in the 1980s.<sup>6,7</sup>
- The FCC and ICNIRP state that any biological effect observed at exposures above the putative 4 W/kg threshold is due to tissue heating.<sup>8-11</sup> However, a large and growing number of peer-reviewed experimental studies have found adverse biological and health effects at lower doses or for longer durations of exposure, demonstrating that an SAR of 4 W/kg is not a threshold for effects of RFR.<sup>12</sup>
- The current RFR exposure limits do not consider potential synergistic effects that reflect modern day exposures to multiple environmental agents.
- There is insufficient information on health effects of 5G radiation.
- Neurological effects, some of which are acknowledged by ICNIRP and are currently being experienced by persons with electromagnetic hypersensitivity (EHS), are health effects that can be mitigated with radiation-free areas for hypersensitive individuals.

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#### About the International Commission on the Biological Effects of Electromagnetic Fields

Founded in 2021, [ICBE-EMF](#) was commissioned by the advisors to the [International EMF Scientist Appeal](#). The Commission is dedicated to ensuring the protection of humans and other species from the harmful effects of non-ionizing radiation. Our primary purpose is to make recommendations, based on peer-reviewed scientific research, that includes and goes beyond establishing numerical exposure guidelines to ensure safety. ICBE-EMF is made up of a multidisciplinary consortium of scientists, doctors and related professionals who are, or have been, involved with research related to the biological and health effects of electromagnetic frequencies up to and including 300 GHz.

ICBE-EMF is a sponsored project of the Electromagnetic Safety Alliance, Inc. (“ESA”). ESA is a United States nonprofit corporation domiciled in Arizona that is qualified as exempt from federal income tax under Section 501(c)(3) of the Internal Revenue Code of 1986, as amended. The main office of ICBE-EMF is in Arizona with field representation in Europe. This office is responsible for funding, media relations and governance activities.

## References

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12. ICBE-EMF. Scientific evidence invalidates health assumptions underlying the FCC and ICNIRP exposure limit determinations for radiofrequency radiation: implications for 5G. Appendix 1, Table 1. Studies demonstrating increased oxidative DNA damage and other indicators of oxidative stress at SAR < 4 W/kg. *Environ Health* (2022) 21:92. <https://doi.org/10.1186/s12940-022-00900-9>