

**Ronald L. Melnick, Ph.D.**  
**ICBE-EMF Chairperson's Report**

**2022-2023 Annual Report**

In our first year of existence, ICBE-EMF has been very successful in drawing attention and recognition of our budding organization as a key player on issues concerned with the effects of radiofrequency electromagnetic fields (RF-EMF) on human health and the environment by publishing reviews in the scientific literature, making oral presentations at scientific meetings, and creating our website that is available as a resource for the scientific community and the general public.

With regard to our objective of making recommendations to ensure protection of humans and other species from harmful effects of non-ionizing radiation (NIR), our contributions to the scientific literature on biological effects and health risks from exposures to RF-EMF included several recommendations for reducing exposures by agencies that set exposure limits to RF-EMF, manufacturers of wireless devices, and users of those devices.

ICBE-EMF currently has twenty-one research and physician scientists from eleven different countries who serve as commissioners and special experts, and who have authored numerous scientific articles on the biological and health effects of EMF. Our areas of expertise include EMF dosimetry, electrical engineering, epidemiology, toxicology, cellular and molecular biology, carcinogenicity, and public health policy. As ICBE-EMF takes on future issues related to our core mission, additional areas of expertise may be needed.

During the past year, we developed and published two important papers in open-access, peer-reviewed journals that address the inadequacy of current exposure limits to RF-EMF, with recommendations for reducing human exposures:

- **Our first paper, “Scientific evidence invalidates health assumptions underlying the FCC and ICNIRP exposure limit determinations for radiofrequency radiation: implications for 5G,”** highlighted the fact that the current exposure limits to RFR established by ICNIRP and the FCC in the late 1990s and then reaffirmed in 2020 are deficient as they ignore important health effects data published over the past 25 years, as well as health risks to sensitive and susceptible subgroups and to the environment.

- It does not take a genius to realize that exposure limits to RFR based on a single behavioral response in acute studies conducted with small groups of rats and monkeys in the 1980s would be adequate to define safe exposure levels for the general population exposed chronically to this type of radiation. Yet, this is what has been done by ICNIRP and the FCC. Their rationale was that excessive tissue heating was the only possible adverse effect of RF-EMF, and that based on the acute behavioral studies from the 1980s, a whole-body specific absorption rate (SAR) of 4 W/kg was a threshold dose for any thermal or otherwise harmful effects of this radiation.

- Our paper laid bare the fallacy of their assumptions based on results from many hundreds of health effects studies on RFR that demonstrate adverse effects of RF-EMF occur at exposures below the putative threshold SAR of 4 W/kg. Consequently, we concluded that exposure limits based on the application of arbitrarily selected “safety factors” to an invalid threshold dose does not adequately protect workers, children, hypersensitive individuals, and the general population from short-term or long-term exposures to RF-EMF. Therefore, we called for health protective exposure limits to RFR from current and future wireless communication systems that are based on scientific evidence, and not on untested assumptions.
- **Our second paper, “Cell phone radiation exposure limits and engineering solutions,”** built on the first paper by explaining how low intensity sub-thermal exposures to RFR-EMF can perturb biological systems and described several low-cost software and hardware modifications that can reduce human exposures to RFR emissions from wireless devices. These solutions block RFR emissions when the phone is in contact with the body, reduce the percent power absorbed by the body, and limit call durations of emissions without altering the quality of communications.

**ICBE-EMF’s future activities in the next year and beyond** must continue to align with our objective of making recommendations to ensure protection of humans and other species from harmful effects of non-ionizing radiation. Some areas where we can make major contributions include the following:

- 1) Continue to be responsive to articles by individuals or agencies that promote perspectives that are misleading with respect to the safety of RF-EMF. This may be accomplished by writing commentaries on specific topics or writing letters to the editors of journals explaining why an article that they published was inaccurate and misleading. One area where we need to pay close attention is the systematic reviews and health risk assessments on RF-EMF that are being developed through the support of the WHO, because many members of ICNIRP are co-authors of those documents.
- 2) Review articles that address what is known about the effect of RF-EMF are still needed (e.g., children’s health, neurological effects, reproductive toxicity, mechanisms of RF-induced effects, additive or synergistic effects with exposure to other chemical or physical agents) with expansion on what is not known and what types of future research are required to fill critical data gaps.

3) Continue our discussions on possible neurological effects in children and develop a plan to conduct a pilot study evaluating EEG scans and heart rhythm in relation to exposures to RF-EMF from body-worn RF personal monitors. Starting this year, ICBE-EMF will be able to provide limited financial support for small special projects that are endorsed by our commission and that have approved protocols. Hopefully, results from these projects will help our members obtain funding for more comprehensive investigations.

4) Our long-term goal remains to promote the development of science-based exposure limits to RF-EMF that are protective of human and environmental health. Our papers published last year were strongly critical of current exposure limits as well as the determination of health risks based solely on estimations of whole body or local tissue SARs. This obligates us to recommend alternative dosimetric(s) that can be used to estimate organ-specific dose and to recommend risk assessment approaches based on effects at sub-thermal exposures.

5) With changing technologies, we need to work on methodologies that can reliably predict health risks before widespread implementation of new wireless networks. This might be possible with a greater understanding of mechanisms of frequency- and modulation-dependent events that are necessary for RF-EMF-induced health effects.

As ICBE-EMF engages in new activities related to health effects of RF-EMF, there may be occasions when expertise from individuals who are not currently members of the commission may be needed. This may be accomplished by expanding the membership of the commission or by collaborations with individuals outside of the commission. Although collaborations with external investigators are encouraged, especially when additional expertise is needed, papers that are based on discussions from ICBE-EMF meetings and that recommend specific policy changes will be authored solely by members of ICBE-EMF.

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