MICRO WAVE NEWS
A Report on Non-Ionizing Radiation

WHO Gets an 'F' on RF

ICBE-EMF: Health Reviews Suffer from Faulty Analysis & ICNIRP Bias

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For close to 15 years, the World Health Organization (WHO) has been struggling to set out its views on the health effects of RF radiation. It hasn't been going well, and it just got worse.

A group of scientists and activists at the International Commission on the Biological Effects of EMFs (ICBE-EMF) has issued a public warning: What the WHO has accomplished to date is so flawed that it should scrap what's been done and start afresh.

This would not be the first time the WHO went back to square one on RF radiation.

In 2014, after two years of preparation, the WHO released a draft of a new RF–health assessment —formerly known as an Environmental Health Criteria (EHC) document. Soon afterwards, however, the project was quietly shelved. It would be five years before the WHO went back to work, ostensibly from scratch.

When Emilie van Deventer, who runs the WHO radiation program, restarted the RF EHC revision in 2019, she commissioned 12 systematic reviews, each on a different set of potential RF–health impacts. These have now all been published in the journal *Environment International* (see Table 1 below). In 2022, as the reviews were being prepared, van Deventer assembled a working group to use them to draft a new RF EHC. The previous edition came out more than 30 years ago. (A short history is here.)

All but one of the RF systematic reviews receive a failing grade from the ICBE-EMF. "We uncovered numerous flaws, including the exclusion of relevant studies, reliance on weak studies, inappropriate combining of studies...and undisclosed biases among the authors," states Ron Melnick, the lead author of the ICBE-EMF critique, in a press release.

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The ICBE-EMF paper was posted by the journal *Environmental Health* yesterday, October 2. It's open access.

Misusing Meta-Analyses

The new paper is not ICBE-EMF's first critique of the WHO systematic reviews. Members —including John Frank, Joel Moskowitz and Melnick— have previously targeted two reviews for revision and/or retraction: those on RF effects on tinnitus and migraines and on cancer risks in humans (our coverage is here and here).

What's new in the *Environmental Health* paper is that the ICBE-EMF points to flaws among the ensemble of 12 WHO systematic reviews. Chief among them is an over-reliance on meta-analyses to integrate and summarize what is a complex —and all too often controversial— literature.

Meta-analysis, a procedure in which the data from independent studies are pooled to yield a general conclusion, only makes sense if the studies to be combined are of a similar type. When they are different, the analysis is subjective and can be skewed.

Van Deventer has consistently declined to disclose how the expert groups were selected and what they were tasked to do. Indeed, the whole WHO EHC process has been shrouded in secrecy with no public disclosures other than in the papers that have appeared in *Environment International.* Based on what has been published, it's clear that the WHO wanted all 12 of the RF systematic reviews to include a meta-analysis; what's less clear is whether anyone checked to see if they were all necessary or appropriate. On average, across all subjects, about half of published systematic reviews have a meta-analysis.

For the 11 WHO systematic reviews with a meta-analysis, the studies are too different to blend, and the results are "unreliable," according to the ICBE-EMF. It spells out where each of the meta-analyses went wrong in an open access, supplementary file (#2), which accompanies the paper.

"We hope that the WHO will abandon the meta-analyses in favor of narrative systematic reviews of the peer-reviewed literature," Moskowitz told me in an interview.

Too Much ICNIRP

ICBE-EMF's other major concern is ICNIRP's "excessive" influence in the preparation of the WHO systematic reviews.

That ICBE-EMF would be critical of ICNIRP should not be surprising. Not at all. The ICBE-EMF was set up three years ago to challenge the hegemony that ICNIRP has enjoyed since it was established in 1992.

At least one current or former member of ICNIRP was on each of the 12 review groups. Martin Röösli of the University of Basel, who stepped down last year after serving two terms as a commissioner,

is a coauthor of four of the systematic reviews. Ken Karipidis, the current vice chair of ICNIRP, is a coauthor of three reviews.

Arguably, Maria Feychting of the Karolinska Institute in Stockholm played the most important role in the WHO EHC project. Feychting, a vocal skeptic of cancer risks, helped design the study protocol of *six* of the systematic reviews. She served on ICNIRP for 12 years, the maximum allowed; for eight of those years, she was the vice chair of the Commission.

The table below, adapted from the ICBE-EMF paper, shows who from ICNIRP wrote and/or helped design each of the 12 systematic reviews.

Table 1 WHO-commissioned systematic reviews on health effects of RF-EMF

SR1A: Karipidis et al. [4]. 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. ICNIRP: Karipidis, Baaken, Röösli, Feychting *(P)*

SR1B: Karipidis et al. [5]. The effect of exposure to radiofrequency fields on cancer risk in the general and working population: A systematic review of human observational studies – Part II: Less researched outcomes. ICNIRP: Karipidis, Baaken, Röösli, Feychting (P)

SR2: Mevissen et al. [6]. Effects of radiofrequency electromagnetic field exposure on cancer in laboratory animal studies, a systematic review. ICNIRP: Wood

SR3A: Kenny et al. [7]. The effects of radiofrequency exposure on male fertility: A systematic review of human observational studies with dose–response meta-analysis. ICNIRP: Feychting (P)

SR3B: Johnson et al. [8]. The effects of radiofrequency exposure on adverse female reproductive outcomes: A systematic review of human observational studies with dose–response meta-analysis. ICNIRP: Feychting (P)

SR4A: Cordelli et al. [9]. Effects of radiofrequency electromagnetic field (RF-EMF) exposure on male fertility: A systematic review of experimental studies on non-human mammals and human sperm in vitro. ICNIRP: Marino, Wood

SR4B: Cordelli et al. [10]. Effects of radiofrequency electromagnetic field (RF-EMF) exposure on pregnancy and birth outcomes: A systematic review of experimental studies on non-human mammals. ICNIRP: Marino, Wood

SR5: Benke et al. [11]. The effects of radiofrequency exposure on cognition: A systematic review and meta-analysis of human observational studies. ICNIRP: Karipidis, Feychting (P)

SR6: Pophof et al. [12]. The effect of exposure to radiofrequency electromagnetic fields on cognitive performance in human experimental studies: Systematic review and meta-analyses. ICNIRP: Pophof, Kuhne

SR7: Röösli et al. [13]. The effects of radiofrequency electromagnetic fields exposure on tinnitus, migraine and non-specific symptoms in the general and working population: A systematic review and meta-analysis on human observational studies. ICNIRP: Röösli, Feychting (P)

SR8: Bosch-Capblanch et al. [14]. The effects of radiofrequency electromagnetic fields exposure on human self-reported symptoms: A systematic review of human experimental studies. ICNIRP: Röösli, Oftedal (P)

SR9: Meyer et al. [15]. The effects of radiofrequency electromagnetic field exposure on biomarkers of oxidative stress in vivo and in vitro: A systematic review of experimental studies. ICNIRP: Kuhne

(P) participated only in writing the systematic review protocol

Adapted from R.L. Melnick et al., *Environmental Health*, posted October 2, 2025

(click to expand)

Because ICNIRP's exposure limits are based solely on thermal effects —Moskowitz calls them "completely inadequate"— ICBE-EMF sees the potential for bias. ICNIRP would have a strong incentive to discount non-thermal effects, especially those related to cancer. A recognized non-thermal effect would contradict the ICNIRP guidelines and strengthen the case for lower exposure limits. ICNIRP has actively avoided this predicament for decades.

ICBE-EMF lays out what's at stake in the closing paragraph of the critique:

> "Due to serious flaws in the reviews and [the meta-analyses], the WHO-commissioned [systematic reviews] cannot be used as proof of safety of cell phones or other wireless communication devices and should not be relied upon for the forthcoming WHO EHC monograph."

Melnick, a former senior toxicologist at the U.S. National Toxicology Program, recently stepped down as the chair of ICBE-EMF, a position he has held since the group's founding in 2022. John Frank, a physician and epidemiologist at the University of Edinburgh, is the new chair. To the RF–health community, Frank is perhaps best known for his essay in favor of pausing 5G technology in keeping with the precautionary principle.

In related news, David Carpenter, a professor at the University of Albany (NY), has joined the commission.

The ICBE-EMF has scheduled a public press conference, “Wireless Radiation and Public Health: What the WHO Reviews Reveal—and Don’t” over Zoom, on October 7th at 9 am, Pacific time (Noon in NY and 6 pm, European time). Register here.

October 13, 2025

A video of the ICBE-EMF’s October 7th press conference is now posted online.

FURTHER READING

Microwave News has been following this story from the beginning. Here are links to some of the most recent coverage:

- “They Kept Telling Us What To Do” (2026)
- Will WHO Kick Its ICNIRP Habit? (2019—2025)
- WHO Review Finds Cancer Risk in RF-Exposed Animals (2025)
- ICBE-EMF Sees “Major Flaws” in WHO RF–Cancer Review (2025)
- Old Wine in New Bottles: Decoding the ICNIRP-WHO Cancer Review (2024-2025)
- ICNIRP Revamp: Closer Ties to WHO EMF Project (2023)
- New Challenge to ICNIRP, Dissident Scientists Seek Tighter Health Limits (2022-2023)

ICBE-EMF, WHO, ICNIRP, systematic reviews, Emilie van Deventer, Ron Melnick, John Frank, Joel Moskowitz, Martin Röösli, Ken Karipidis, Maria Feychting, David Carpenter,

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