Old Wine in New Bottles

Decoding New WHO–ICNIRP Cancer Review

Game Over? Likely Not

September 11, 2024
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An international team of researchers, many with close ties to ICNIRP, is trying to put to rest the very possibility that RF radiation can lead to brain cancer —and, by extension, any type of cancer.

On August 30, they published a detailed systematic review of RF and cell phone epidemiological studies, which concludes that there is little evidence to justify continued concern over a possible cancer link.

The review, commissioned by the World Health Organization's (WHO) EMF Project, appears in the journal *Environment International*.

A few days later, Ken Karipidis, the lead author, posted a short summary to serve as a press release for the journal manuscript, which takes up 52 typeset pages of the journal.

The summary offers a more direct and accessible message under the headline

Mobile Phones Are Not Linked to Brain Cancer
According to a Major Review of 28 Years of Research

It appears on a well-visited online news bulletin board, The Conversation.

"We can now be more confident that exposure to radio waves from mobile phones or wireless technologies is not associated with an increased risk of brain cancer," declares Karipidis in the press release. He is an assistant director of the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and the vice chair of ICNIRP, the International Commission on Non-Ionizing Radiation Protection.

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2026 Articles
2025 Articles
2024 Articles
2023 Articles
2022 Articles
2021 Articles
2020 Articles
2019 Articles
2018 Articles
2017 Articles
2016 Articles
2015 Articles
2014 Articles
2013 Articles
2012 Articles
2011 Articles
2010 Articles
2009 Articles
2008 Articles
2007 Articles
2006 Articles
2005 Articles
2004 Articles

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The summary was written with his colleague Sarah Loughran, ARPANSA's director of radiation research. She too works for ICNIRP —as a science advisor. She has close ties to her countryman Rodney Croft, who stepped down as chair of ICNIRP a few weeks ago.

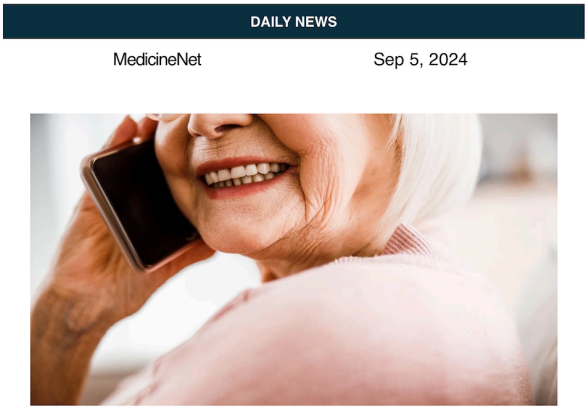
"Overall, [our] results are very reassuring," according to Karipidis and Loughran. They go on to endorse the ICNIRP exposure standards, used by many countries as their own: "Our national and international safety limits are protective."

The review was covered all over the world. It was featured in a number of widely circulated news outlets, including *The Guardian*, the *Washington Post* and Reuters —as well as countless aggregators. Many simply served up a version of what appears in The Conversation (one example).

Here's the headline from the U.K. *Daily Mail:*

> **Truth about cellphones and brain cancer link, according to major World Health Organization review**

And here's a teaser from the *Daily News* in Pakistan:



Do Cellphones Cause Cancer? New Report Has Answers

The *Sydney Morning Herald* told its hundreds of thousands of readers that it was time to call it quits:

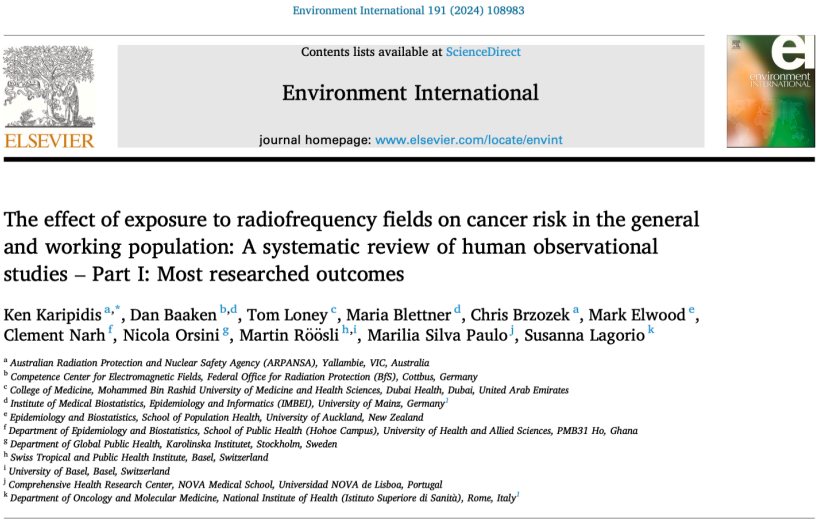
> **Scientists make definitive call on whether mobile phones cause brain cancer**

Is the Karipidis review really the last word on the long-standing question of whether cell phones pose a cancer risk? Is this the final verdict? The short answer is no.

The fact is that there's very little new here. The same people have been making similar claims for some 20 years. This is only their latest gambit to make them stick.

Who Wrote the Review

Karipidis has ten coauthors on the published paper. Here's the full roster:



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journal homepage: www.elsevier.com/locate/envint

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

Ken Karipidis [a,*], Dan Baaken [b,d], Tom Loney [c], Maria Blettner [d], Chris Brzozek [a], Mark Elwood [e], Clement Narh [f], Nicola Orsini [g], Martin Röösli [h,i], Marilia Silva Paulo [j], Susanna Lagorio [k]

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[c] College of Medicine, Mohammed Bin Rashid University of Medicine and Health Sciences, Dubai Health, Dubai, United Arab Emirates
[d] Institute of Medical Biostatistics, Epidemiology and Informatics (IMBEI), University of Mainz, Germany
[e] Epidemiology and Biostatistics, School of Population Health, University of Auckland, New Zealand
[f] Department of Epidemiology and Biostatistics, School of Public Health (Hohoe Campus), University of Health and Allied Sciences, PMB31 Ho, Ghana
[g] Department of Global Public Health, Karolinska Institutet, Stockholm, Sweden
[h] Swiss Tropical and Public Health Institute, Basel, Switzerland
[i] University of Basel, Basel, Switzerland
[j] Comprehensive Health Research Center, NOVA Medical School, Universidad NOVA de Lisboa, Portugal
[k] Department of Oncology and Molecular Medicine, National Institute of Health (Istituto Superiore di Sanità), Rome, Italy

(click to expand)

Four are senior members of the RF community:

- Germany's Maria Blettner,
- New Zealand's Mark Elwood,
- Italy's Susanna Lagorio, and
- Switzerland's Martin Röösli.

They, together with Karipidis, are the architects of the review. All five, without exception, have repeatedly rejected an RF–cancer risk.

There's a lot of history here, including bitter disagreements and lingering grudges between opposing factions.

Blettner and Lagorio are veterans of the 13-country Interphone project, the most important epidemiological study pointing to a link between cell phones and brain tumors. The final paper was held up for years as clashes within the study team over what the data showed brought work to a standstill. Both Blettner and Lagorio saw no cancer risk and worked to say so in the final conclusions. They did not succeed, though they were able to bury some of the most provocative results in an unpublished appendix. As finally published in 2010, Interphone showed a cancer risk among long-term users. Many in the no-risk faction never got over it and have worked ever since to reverse the finding.

The feuding within Interphone continued and got so bad that the project was shuttered before all the analyses were completed.

The following year, in 2011, Blettner was a member of the panel assembled by the International Agency for Research on Cancer (IARC) that designated RF radiation as a possible human carcinogen. The decision was based largely on Interphone —salt in the wound for the no-cancer faction. After the final vote at the IARC meeting, Blettner announced that she would file a minority report. Here again, she maintained that the panel was making a mistake. (If she wrote a dissent, it was not made public.)

Röösli was also on the IARC panel. Though he kept a lower profile than Blettner, his no-risk outlook is well documented (see below). He became an ICNIRP commissioner in 2016 and served for eight years, until two months ago.

Another key player is Maria Feychting of Sweden's Karolinska Institute, who was the leader of the no-cancer Interphone faction. She's not on the masthead of the new review, but she helped design it. She is a coauthor of the study protocol, which was released in 2021. Feychting was with ICNIRP for 20 years: 12 as a full member —the maximum allowed. She was the vice chair from 2012 to 2020—as Karipidis is now.

Soon after the review appeared in print, Feychting registered her approval on Twitter (X):



In short, the new systematic review is an ICNIRP production.

Indeed, ICNIRP's scientific secretary, Dan Baaken, is another coauthor of the new review! He serves, with Karipidis, on the Commission's board of directors. Baaken is on staff at the German Radiation Protection Office (BfS), the principal sponsor of ICNIRP.

ICNIRP has always rejected a cancer risk. No one on ICNIRP has ever broken ranks.* This is not surprising: The Commission is a private, self-perpetuating club. Membership demands swearing allegiance to the no-cancer dogma. Okay, that's a bit of an exaggeration, but not by much.

The results of this review were never in doubt. The WHO managers, who selected the Karipidis team, knew what to expect —and they got what they wanted.

It's All Happened Before

Five years ago, some members of the same team made similar attempts to close down the RF-cancer debate. Two different papers were published within a few months of each other with essentially the same no-risk message. They were not well received.

The first came out two weeks before Christmas 2018; here too Karipidis was the lead author. It was an analysis of brain tumor trends in Australia. His team included Elwood and Croft. At the time, Croft was the chair of ICNIRP and Karipidis was an ICNIRP science advisor.

Here's the headline for the 2018 ARPANSA press release:

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

arpansa

New Australian study finds no link between mobile phone use and brain cancers

11 December 2018

ARPANSA might have used the same template for its new release!

Australian Government
Australian Radiation Protection and Nuclear Safety Agency

Home

WHO review finds no link between mobile phone use and brain cancer

4 September 2024

The 2018 paper's study design got slammed. Surprisingly, Karipidis had excluded all Australians older than 59 years of age from his analysis. By doing so, he ignored the largest segment of the country's brain tumor population, virtually guaranteeing the no-risk result.

It was an irrational decision, Bruce Armstrong, a professor of epidemiology at the University of Sydney, said at the time. Armstrong was a member of both the Interphone project and the IARC RF panel in 2011.

Within a few months ICNIRP promoted Karipidis to Commissioner.

The second paper appeared a couple of weeks later —in January 2019— in the *Annual Review of Public Health.* It nearly didn't get published! Röösli was the lead author, joined by Lagorio and Feychting. IARC's Joachim Schüz, another member of the no-risk Interphone faction, was also a coauthor. Their review concluded — as expected— that cell phones are cancer safe.

On reading Röösli's manuscript, Michael Jerrett, the editor of the *Annual Review,* got cold feet. He was concerned that they had gone too far in denying the risk. I described some of what had happened behind the scenes at the time:

> When Röösli submitted the manuscript [in August 2018], Jerrett worried that the authors had overstated the no-risk case and asked Joel Moskowitz at UC Berkeley to take a look and offer an informal peer review. "The paper is the most biased review of this topic that I have [ever] read," Moskowitz replied. He urged Jerrett not to publish it, telling him that doing so would be a "disservice to public health."

Changes were made, and the paper was duly accepted. Moskowitz was far from satisfied, however. The paper "is biased to minimize evidence of increased risk," he said.

What's New

Karipidis claims that the new systematic review is a game changer because, as he and Loughran put in The Conversation, "It is the most comprehensive review on this topic."

The Guardian put that in its headline:

Cancer research

Mobile phones not linked to brain cancer, biggest study to date finds

The paper certainly qualifies as big. It covers 52 pages of *Environment International* —that's a lot for any journal. In addition, there are hundreds more pages online in various annexes, appendixes and supplemental tables.

The reason the paper is so long because it's actually two papers in one. Nested within the systematic review is a new meta-analysis—that's when data from past studies are combined to improve statistical confidence.

It's often difficult to disentangle the review from the meta-analysis. Adding to the muddle is that "meta-analysis" is not in the title of the paper.

Karipidis described what they did in The Conversation:

> "[We] considered more than 5,000 studies, of which 63, published between 1994 and 2022, were included in the final analysis."

That "final analysis" *is* the meta-analysis, *not* the review. It's the meta-analysis that intergrates the 63 studies (they're listed in Table 4 of the paper). The systematic review includes many other studies beyond those 63 (eg, Table S4 in Annex 4).

Karipidis and co. should have prepared two separate papers. The meta-analysis is new research and should be judged on its own terms, as should the review.

Here's why: Four years ago, a team of Korean and American researchers —Berkeley's Moskowitz is among them— did their own meta-analysis. Using essentially the same dataset as Karipidis, they "found evidence" of an increased tumor risk in the brain and salivary glands. Who decides which meta-analysis is more reliable?

Röösli, then on ICNIRP, and the U.K.'s Frank de Vocht, now on ICNIRP, published a letter pointing out where, in their view, the team had gone wrong. The authors replied.

Resurrecting the Danish Cohort Study

Among the additional studies included in the systematic review is Karipidis's own Australian brain tumor study —the one that came under heavy fire in 2018. Ignoring his critics, Karipidis also gives it prominent play in The Conversation. The new findings "align" with that previous research, he and Loughran say. (Maybe so!)

Even more controversial is that Karipidis and co. included the Danish Cohort Study in their meta-analysis. The DCS was not designed to investigate cell phones, and those results are widely deemed to be unreliable. The 2011 IARC RF panel members never even considered it. It was uninformative, IARC said. More salt in the wounds for the no-risk faction.

The Agency's Robert Baan, who ran the 2011 meeting, called the DCS study design "remarkable" —in the bad sense of the word.

To be sure, there have been attempts to rehabilitate the DCS. The strongest proponents for a second chance are —yes— Feychting, Lagorio and Röösli, together with Anders Ahlbom, Feychting's mentor at the Karolinska.

Ahlbom is another member of the no-risk club. He too was on ICNIRP, serving for the full 12 years (1996-2008). Feychting took his seat when he stepped down. Both Ahlbom and Feychting initially raised concerns about the DCS but later changed their minds.

When a new installment of the DCS came out in 2011 —after the IARC meeting— the accompanying press release promoted it as the biggest and best ever to show no link between cell phones and brain tumors.

What's at Stake

The Karipidis review was commissioned by the WHO as part of its long-running reassessment of RF health effects, known as an Environmental Health Criteria (EHC) monograph. The document will likely guide worldwide exposure policies for a generation. The last update came out in 1993.

But the stakes here are even higher. The no-risk faction will likely use the new review to justify dialing back IARC's possible cancer risk designation.

ICNIRP now functions as the WHO's EMF scientific secretariat. It may soon dictate policy at IARC as well, especially since Schüz, a charter member of the no-risk club, is on the Agency's senior staff and, from all appearances, has the ear of the Director.

Karipidis is unabashedly clear about his objective: Concerns around links between cancer and mobile phones should be put to rest, he told *The Guardian*.

Missing from all the coverage and commentary is the elephant in the room: The $30 million NTP animal study which found "clear evidence" that RF radiation caused malignant tumors in rats. There is also the Ramazzini study, which complement the NTP results. Many say that the strongest evidence for a cancer risk is now the animal work —no longer the epidemiology.

The WHO systematic review on RF and cancer in animals has yet to be published. There's more to come. Stay tuned.

ICBE-EMF Sees "Serious Flaws"

January 15, 2025

The International Commission on the Biological Effects of Electromagnetic Fields (ICBE-EMF) has published a scathing assessment of Ken Karipidis's WHO systematic review on RF radiation and cancer. ICBE-EMF, which was formed a few years ago as a counter to ICNIRP, spells out five key flaws in a letter published in *Environment International.*

The stated flaws are:

1. The conclusions are based on studies with flawed designs;
2. An overreliance on RF exposure categories that don't reflect actual exposures;
3. Distorted evidence on brain cancer time-trends;
4. Understated uncertainty about cancer risk after long latency periods;
5. A failure to follow scientific guidance for systematic reviews and meta-analyses.

Overall, ICBE-EMF concludes: "There is no scientific justification for concluding there is any certainty that RF exposures do not cause cancer."



ELSEVIER

Environment International

Available online 30 December 2024, 109200

In Press, Corrected Proof What's this?

Correspondence

The Systematic Review on RF-EMF Exposure and Cancer by Karipidis et al. (2024) has Serious Flaws that Undermine the Validity of the Study's Conclusions

John W. Frank [a b 1], Joel M. Moskowitz [c 1], Ronald L. Melnick [d 1], Lennart Hardell [e 1], Alasdair Philips [f 1], Paul Héroux [g 1], Elizabeth Kelley [h 1]

The journal has also posted a reply by Karipidis's team.

And ICBE-EMF, in turn, has answered that response. It appears on the ICBE-EMF website.

Second Letter Challenges WHO Cancer Review: "Epidemiology Is Not Enough!"

January 31, 2025

Four Italian doctors published a letter today in *Environment International* seeking to cast further doubt on the conclusions of the WHO systematic review of RF cancer risks.



Environment International
Available online 31 January 2025, 109275
In Press, Corrected Proof What's this?

Correspondence

Exposure to radiofrequency electromagnetic fields and risk of cancer: Epidemiology is not enough! ☆

Agostino Di Ciaula [a b], Maria Grazia Petronio [b], Fausto Bersani [b], Fiorella Belpoggi [b]

The group, affiliated with the International Society of Doctors for Environment (ISDE), includes Fiorella Belpoggi, the former scientific director of the Ramazzini Research Center in Bologna.

Under the title: "Epidemiology Is Not Enough!," they write: "[The WHO team's] reassuring conclusions, however, are based on epidemiological studies with a strength of evidence only ranging, according to authors, from low to moderate." They go on to state: "[T]he only evidence that clearly emerges from the analysis of Karipidis et al. is the lack of certainty about the relationship between exposure to RF-EMF and cancer."

They then add:

> "[No] effort has been made to propose how to use such uncertainties for primary prevention purposes, in particular in terms of public health policies and regulations. A reasonable statement should be that of resorting to caution in the use of RF-EMF, at least until further and more solid epidemiological evidence became available, especially in the case of non-thermal effects and in more vulnerable subjects as children."

The WHO team has yet to respond.

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* James Lin, who served on ICNIRP from 2004 to 2016, is an exception —at least after he stepped down. He kept the faith when he was a Commissioner, but over the last number of years he has expressed rising misgivings about ICNIRP's exposure limits and dogmatic approach in his regular column in the *IEEE Microwave Magazine (*an example here).

More from *Microwave News*

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- IARC Again Asked to Review RF Cancer Risk —Just Not Right Away (2024)

- ICNIRP Still Runs RF at WHO (2023)
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- Will WHO Kick Its ICNIRP Habit? (2019-2024)
- The Danish Cohort Study: The Politics and Economics of Bias (2011)
- IARC Cell Phone Radiation Is a Possible Human Carcinogen (2011)
- Interphone Points to Long-Term Brain Tumor Risks (2010)

WHO, ICNIRP, ARPANSA, NTP, systematic reviews, epidemiology, cancer, IARC, Ken Karipidis, Maria Blettner, Mark Elwood, Susanna Lagorio, Martin Röösli, Maria Feychting, Anders Ahlbom, Rodney Croft, Joachim Schüz, Joel Moskowitz, Michael Jerrett, The Guardian, James Lin, Robert Baan, Interphone, Danish cohort study, The Conversation, ICBE-EMF, ISDE, Fiorella Belpoggi,

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