

Critique of SCHEER Opinion Report on Health Risks from Radiofrequency Radiation

**A review of the EU expert group and opinion of August 2022
on the need of a revision of the maximum exposure limits for
radiation from wireless communications**



Summary of the report prepared by

The Council for Safe Telecommunications (Denmark)
and

The Swedish Radiation Protection Foundation

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Critique of SCHEER Opinion Report on Health Risks from Radiofrequency Radiation. A review of the EU expert group and opinion of August 2022 on the need of a revision of the maximum exposure limits for radiation from wireless communications. 2nd Edition March 31 2023

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Front page picture: 5G base station on building at street level (1st floor) in central Stockholm (Arenavägen, 2022)

Summary

Highlights

- The vast majority of field experts agree that the ICNIRP 1998 limits recommended by EU allow exposure to harmful levels of radiation and that they must be stricter.
- Harmful effects from wireless technology radiation below the ICNIRP limits are clearly established by science.
- The EU Commission scientific advisory group (SCHEER) advises positively on adoption of new ICNIRP 2020 exposure limits allowing even more harmful RF radiation exposure.
- The SCHEER Opinion is biased and appear to be designed to find no risks and to greenlight the adoption of exposure limits that benefits industry.
- SCHEER working group members belong to a small self-referencing circle of no-risk pro-ICNIRP advocates, with ties to telecoms industry.
- The SCHEER panel do not meet the basic requirement for risk assessors: The demand for excellence and absence of economic or political ties.
- The SCHEER methodology for assessing the scientific evidence is insufficient, severely biased, and unscientific. A central thread throughout SCHEER report is the manufacture of doubt about harmful effects instead of an objective assessment of the science.
- SCHEER report overlaps risk assessment and risk management - a no-go in public health.
- There is an urgent need for complete re-evaluation of the science.
- The proper EU body to undertake such a risk analysis is the European Environmental Agency.

Context

The EU Commission scientific advisory group, SCHEER, has released a draft opinion report¹ on the possible risks from exposure to wireless technology like 5G, 4G, cellphones, Wi-Fi etc. The SCHEER Opinion published in August 2022 advises positively on the adoption of the ICNIRP 2020 limits, in stark contrast to the opinion of the majority of field experts, concluding that ICNIRP limits are far too high, allowing radiation exposures known to cause harmful effects.

As for the previous SCENIHR reports (2007, 2009 and 2015), with the appointed SCHEER advisory group, the European Commission has failed to include representatives from the vast majority of scientific experts, who agree that there is sufficient evidence of health risks well below the EU Commission endorsed ICNIRP exposure guidelines in order to adopt more protective limits.

The EU Commission has appointed only eight scientists to produce the SCHEER Opinion report 2022 (the working group). The chosen scientists are either not experts in the field, or scientists who have previously expressed opinions favorable to upholding the prevailing exposure limits, and some members even having ties to the telecommunications industry.

¹ https://health.ec.europa.eu/system/files/2022-08/scheer_o_044_0.pdf

A common thread runs throughout the SCHEER Opinion 2022 report: The manufacture of doubt about the abundant scientific evidence of harmful effects from the radiofrequency radiation (RFR) emitted by the telecommunications industry. On the other hand, no-effect studies are accepted without relevant criticism.

Applying the SCHEER methodology on e.g., smoking, would render the evidence on health effects of smoking "very weak". Producing flawed "no-effect" studies and ensuring that these are weighed equally to studies finding effects is the method the tobacco industry used for decades to protect their products, as described in the EEA report "Late lessons from early warnings" (2013)².

Abundant evidence shows severe effects on flora and fauna³, in particular on plant physiology and insects, with potential devastating effects for biodiversity and the ecosystem. SCHEER fails to point out the need of a revision of the guidelines to include protection of the flora and fauna. The effects on the environment, such as effects on birds and insects, are completely ignored by the SCHEER report.

A predetermined Outcome by Design

Upholding and adopting the new ICNIRP 2020 guidelines is of paramount importance to the telecommunications industry. A presentation from Ericsson, a major telecommunications infrastructure provider, serves as an illustration to the fact that lower limits than those recommended by ICNIRP is considered a risk to this industry. It will become difficult or impossible to roll out 5G if 100 times lower limits are applied. However even lower limits are requested by a majority of the RF-EMF scientists.

The obvious beneficiary of the manufactured doubt on harmful health effects is the telecommunication industry while the loser is the public health and the environment

Self-referencing Scientists create an Illusion of Consensus

Journalists from *Investigate Europe* uncovered how a close-knit circle of pro-ICNIRP scientists, "the ICNIRP Cartel", some with documented ties to telecom interests, sat on all major official science review boards and referenced each other, thus creating an illusion of scientific consensus of no-risk from wireless technology products.

The SCHEER working group forms part of this closed circle of a few self-referencing expert groups. The SCHEER opinion report repeatedly refers to other reports from scientist groups within this closed circle. At the center of this circle is the officially sounding *International Commission on Non-Ionizing Radiation Protection*, or ICNIRP for short. ICNIRP is in fact a private invitation-only club.

The EU Commission endorses exposure limits set by ICNIRP that only protect from acute, intense exposure heating effects. This endorsement, known as *Council Recommendation 1999/519/EC and Directive 2013/35/EU*, is based on what ICNIRP deems to be "established effects" by the highest degree of proof. This extreme view of the evidence effectively short-circuits protection against other harmful effects than heating and the *precautionary principle*.

² www.eea.europa.eu/publications/late-lessons-2/late-lessons-2-full-report/late-lessons-from-early-warnings/view

³ See footnotes 7-9 below

There are many clear indications throughout the report that the SCHEER report is biased towards the ICNIRP perspective, thus rendering support for telecommunications industry interests ahead of public health protection. This is for instance, expressed in the report's suggestion on how to handle that the new 5G technology "can trigger the population's concern about potential health risks" due to the permitted doubling of base station transmitted power compared to 4G and a health risk from high-intensity beam-formation. SCHEER proposes to handle the public concern by changing the way of measuring exposure while making a reference to a paper by the major telecommunication infrastructure provider Ericsson.

SCHEER Report conflicts with vast majority of Field Experts

The majority of 256 scientists from this field of research, with more than 2000 peer reviewed studies among them, have signed a joint statement¹⁴ (EMF-Scientist Appeal) demanding better protection in terms of lower limits for RFR exposure due to the growing evidence of harmful effects well below the ICNIRP limits: "It is our opinion that, because the ICNIRP guidelines do not cover long-term exposure and low-intensity effects, they are insufficient to protect public health."

In October 2022, a group of 16 world leading scientists within the independent *International Commission on the Biological Effects of Electromagnetic Fields (ICBE-EMF)* published a peer reviewed paper providing evidence that the ICNIRP limits endorsed by the EU Commission, are based on false and outdated assumptions, and do not protect against harmful effects. Also concluding that the exposure limits must be lowered, and that the 5G roll-out must be halted:

*"The past 25 years of extensive research on RFR demonstrates that the assumptions underlying the FCC's and ICNIRP's exposure limits are invalid and continue to present a public health harm"*⁵

Harmful Effects from Wireless Technology use clearly established in Science

Among the effects that have been documented to occur below the threshold of the EU Commission endorsed ICNIRP limits are: Negative effects on the brain and the nervous system, behavioral effects (symptoms such as headache, dizziness, and sleep disturbances), DNA-damage, oxidative stress, harmful effects on sperms and increased risk of cancer. Alone, the formation of reactive oxidative compounds (ROS) and the resulting oxidative stress has been evidenced in more than 200 scientific papers⁶, and is a likely cause of many other of the observed effects, as ROS interfere with basic cellular functions.

There is also a growing body of evidence of harmful effects on flora and fauna^{7,8,9}, including solid evidence of negative physiologic effects on plants¹⁰ and an array of negative effects on insects.

⁴ <https://emfscientist.org/index.php/emf-scientist-appeal>

⁵ https://icbe-emf.org/wp-content/uploads/2022/10/ICBE-EMF-paper-12940_2022_900_OnlinePDF_Patched-1.pdf

⁶ Carpenter et al. 2022 <https://jamanetwork.com/journals/jamaoncology/article-abstract/2791555>

⁷ Levitt et al., 2021a, Levitt et al., 2021b, Levitt et al., 2021c).

⁸ <https://pubmed.ncbi.nlm.nih.gov/27650031/>

⁹ https://ehtrust.org/wp-content/uploads/Thill_Review_Insects_2020_Engl.pdf

¹⁰ https://eklipse.eu/wp-content/uploads/2020/10/EMR-KnowledgeOverviewReport_FINAL_27042018-1.pdf

In addition, the 5G Appeal, signed by over 420 scientists and medical doctors, concludes that 5G will lead to “potential serious health effects” and a “massive increase of mandatory exposure” to radiofrequency radiation. The 5G Appeal has repeatedly been communicated to the EU Commission.¹¹ The first two studies on health effects in humans from 5G base station radiation published in 2023 (case studies) confirmed that 5G increase radiation exposure massively, indicating that 5G rapidly can symptoms known as the microwave syndrome although the levels were below the ICNIRP limits.^{12,13}

In 2016, a group of European medical doctors published the EUROPAEM EMF guidelines. In this publication it is recommended that exposure to RF should not exceed between 0.000001% to 0.001% of ICNIRP limit during extended exposure (at least 4 hours a day) to frequencies between GSM 900 to Wi-Fi 5,6 GHz, depending on sensitivity, night-time or daytime exposure. Thus, very much lower maximum levels than the ICNIRP 2020 levels of 10 million microwatts per square meter averaged over 6 or 30 minutes.

In striking contrast to the ICBE-EMF's and the EMF-Scientist groups conclusions and the available evidence, the authors of the SCHEER Opinion report claim they “*Could not identify moderate or strong level of evidence for adverse health effects resulting from chronic or acute RF EMF exposure at levels below the limits set in the annexes of Council Recommendation 1999/519/EC and Directive 2013/35/EU*” (i.e. below the ICNIRP limits set in 1998). Therefore, SCHEER advise positively on the adoption of the updated ICNIRP 2020 guidelines.

The SCHEER Opinion mixes Risk Assessments and Risk Management - in conflict with Public Health Principles

The task for the SCHEER group is to “*assist the Commission in the preparation of legislative proposals and policy initiatives*”. Thus, SCHEER is part of the political system, and the main task of SCHEER is to assist in risk management.

The present SCHEER report comprises both an assessment of the science and an opinion (risk management), which is in clear conflict with the principle of a clear separation of risk assessment and risk management. It also fails regarding both excellence and independence. Half of the working group's members are not experts on RF health effects and the other half has conflicts of interests, thus not fulfilling the criteria of independence.

The European Environmental Agency, EEA was established in the '90s due to the acknowledgment that a clear distinction between the European political system (responsible for risk management) and the organization, providing the scientific risk assessment, is crucial.

The main task of the EEA is to provide sound, independent information on the environment and related public health, including scientific risk assessments. The basis and motives behind the judgments that are fundamental in the assessment of risk and the handling of uncertainty, is a major

¹¹ <https://pubmed.ncbi.nlm.nih.gov/36129168/>

¹² https://www.gavinpublishers.com/assets/articles_pdf/Case-Report-The-Microwave-Syndrome-after-Installation-of-5G-Emphasizes-the-Need-for--Protection-from-Radiofrequency-Radiation.pdf

¹³ https://www.gavinpublishersanncaserep.com/assets/articles_pdf/Case-Report-The-Microwave-Syndrome-after-Installationopen-access/development-of-5G-Emphasizes-the-Need-for--Protection-from-Radiofrequency-Radiationmicrowave-syndrome-in-two-men-shortly-after-9589.pdf

contentious area. Therefore, it is a main obligation for the EEA to ensure that the scientific assessors are not biased due to political and economic interests.

As radiation from wireless technology is an emerging hazard, with huge amounts of scientific evidence for adverse effects, the SCHEER committee (or the EU Commission) should request the EEA to perform the independent risk assessment of the science, as a tool for the subsequent risk management process.

The Methods of SCHEER are biased

This critical review of the SCHEER Opinion 2022 has identified several examples of bias that drive the report towards a conclusion of no-risk.

Among the clear biased methods identified in this critical review are the selection of included reports with a majority referring to the closed circle of the ICNIRP Cartel. Another is the evaluation of the included studies with a clear tendency to draw conclusions such as “strong evidence for no effects” although there is evidence of effects; or “effects are uncertain” although there is strong evidence for health effects.

One such example of biased evaluation is the clear and consistent evidence for increased risk of brain tumors in mobile phone users with more than 10 years of exposure in the heaviest user group. This has been the result of repeated meta-analysis of available epidemiological studies. In this case SCHEER chose create doubt about the solid evidence, by referring to “significant criticism” from two letters to the scientific journal editor of one of these meta-analyses. The two letters were each coauthored by members of ICNIRP, thus propagating the ICNIRP cartel biased view. SCHEER also fails to mention that the evidence of cancerous effects is consolidated by the solid evidence of oxidative stress and DNA damage caused by the radiation (i.e. evidence for the mechanism) and further the cancerous effects found in large animal studies.¹⁴ Other experts conclude: *“When the cumulative body of evidence is assessed, the overall picture on low-intensity nonthermal levels of RFR [radiofrequency radiation] shows a clear and consistent pattern of adverse effects that form the basis of the mechanisms whereby RFR can cause the cancers seen in human populations.”*¹⁵

Further, regarding studies that do not find effects, SCHEER fails to analyze whether it has failed because of poor study design, e.g., irrelevant exposure. In contrast, irrelevant criteria are used to discard a large body of studies that finds effects, e.g., the strict demands for dosimetry, where it is not relevant or pertinent.

In addition, SCHEER fails to specify whether its conclusion of “no effects” is based on studies on short-term exposure or long-term exposure. One such example concerns the cardiovascular effects. Here SCHEER concludes that there is “strong evidence for no-effect” (in itself an unscientific conclusion). This conclusion is based mainly on experimental human short term exposure studies (minutes to an hour), while ignoring several long-term exposure studies showing adverse effects. Thus, the SCHEER conclusion is severely misleading. A recent scientific review by other scientists concluded that radiation from wireless technology may indeed affect the heart¹⁶.

¹⁴ <https://www.fortunejournals.com/articles/aspects-on-the-international-commission-on-nonionizing-radiation-protection-icnirp-2020-guidelines-on-radiofrequency-radiation.html>

¹⁵ Carpenter et al. 2022 <https://jamanetwork.com/journals/jamaoncology/article-abstract/2791555>

¹⁶ <https://www.ewg.org/research/radiofrequency-electromagnetic-fields-may-affect-heart-health-new-ewg-analysis-finds>

Conclusion

The SCHEER report should be dismissed and a new objective evaluation of the risks to health and the environment must be undertaken by competent experts without conflicts of interests and ties to industry. The report is extremely biased about the current scientific evidence of health risks. It cannot be used as a basis for decisions on new exposure limits for the prevention of harmful health and environmental effects. The relevant EU body to manage the new evaluation procedure is The European Environmental Agency.