

ICNIRP RF Guidelines: Protection & non-thermal effects?

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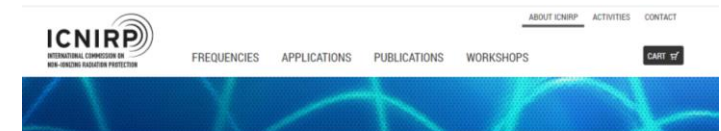
What is the ICNIRP?

- Chartered as an independent commission in 1993 by the International Radiation Protection Association (IRPA)
- To develop and disseminate science-based advice on limiting exposure to non-ionizing radiation (SMF, ELF, RF, IR, UV)



What is the ICNIRP?

- Not-For-Profit Non-Governmental Organization in official relations with World Health Organization & International Labour Organization
- Independent from industry; members declarations of interests available at www.ICNIRP.org



FUNDING & GOVERNANCE

FUNDING

Funding stems from subsidies granted by national and international public institutions such as the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (BMU), the European Union Programme for Employment and Social Innovation (ERDF) 2014-2020 (EC - Directorate General Social Affairs), the International Radiation Protection Association (IRPA), the New Zealand Ministry of Health (MoH), and Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). Occasionally, ICNIRP also receives support to organize meetings or workshops from national ministries or radiation protection agencies. Funding is reported yearly in the ICNIRP [annual reports](#). ICNIRP greatly acknowledges the support received.

SUPPORT to ICNIRP

ICNIRP is grateful for support from national or international public organizations and for private donations. Private donations can be made [here](#).

To safeguard ICNIRP's independence, only donations from private individuals or from businesses not related in any way to the field of non-ionizing radiations can be accepted. For reasons of transparency, donations cannot be anonymous and will be listed on a yearly basis in an ICNIRP donors' report whenever donations are received. Read more on [how to support ICNIRP](#).

GOVERNANCE: Independence & Transparency

ICNIRP is free of vested interests. ICNIRP's budget relies on support granted by public bodies. Additionally, ICNIRP members and ICNIRP SEG members can not be employed by industry. They also are required to comply with the ICNIRP policy of independence and declare their personal interests. All declarations are publicly available on the ICNIRP website next to the ICNIRP SEG (Scientific Expert Group) and ICNIRP members' profile. ICNIRP also publishes its [annual financial report](#) online. Finally, all ICNIRP draft guidelines are made available online for [public consultation](#) ahead of final publication.

These are key elements to ICNIRP's commitment to independence and transparency, which ICNIRP believes is fundamental to carrying out its scientific mission.

NEWS [View all](#)

OCT 2020 International NR Workshop

Due to the COVID-19 crisis, the ICNIRP NR Workshop, Seoul, Korea is cancelled. Other arrangements will be planned and information on those will follow. Thank you for your interest.

MAY 2020 UVC LAMPS and SARS-COV-2

ICNIRP cautions against use of UVC lamps to kill/inactivate the coronavirus (SARS-COV-2).

APR 2020 COVID-19 and RF/EMF

Exposure from 5G telecommunications devices does not cause COVID-19.

TOOLS & TOPICS



ICNIRP RF EMF Guidelines, May 2020

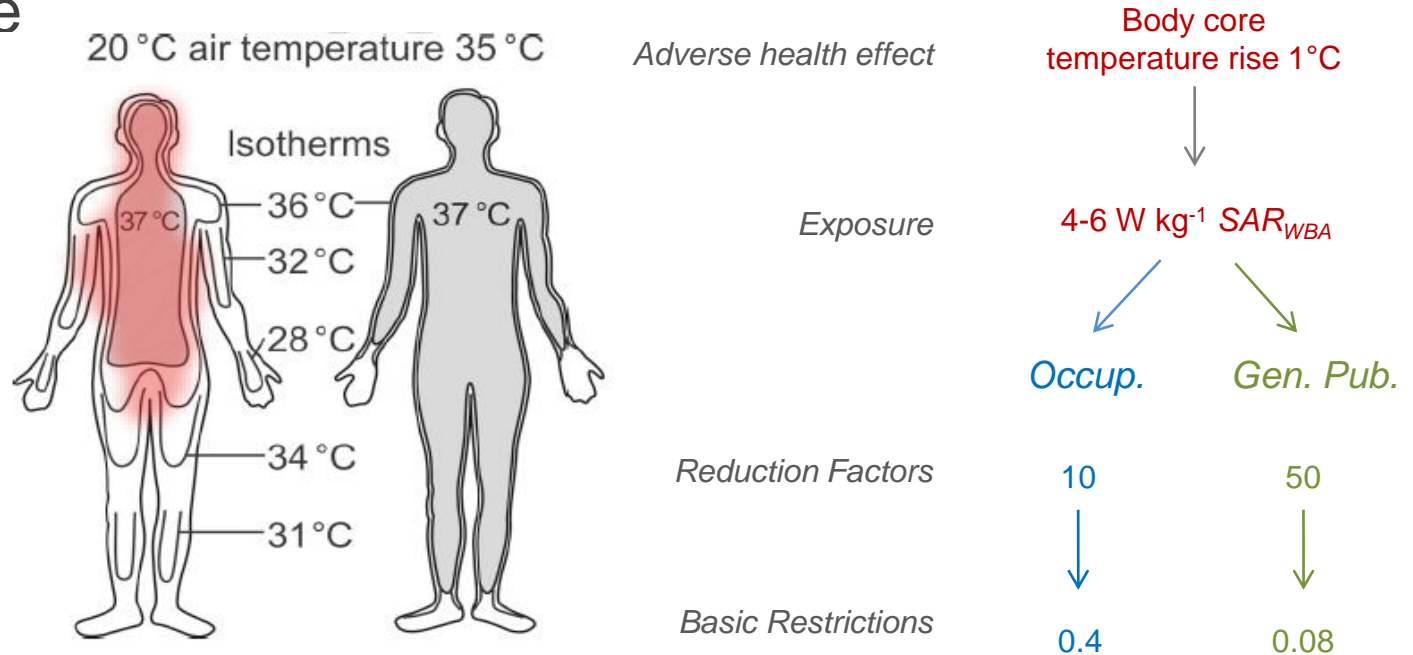
- 5G falls within the RF range (100 kHz to 300 GHz)
- Freely available from ICNIRP website:
<https://www.icnirp.org/cms/upload/publications/ICNIRPrfgdl2020.pdf>
- Provides Basic Restrictions (exposure in tissue) and Reference Levels (environmental fields) to limit exposure in tissue to safe levels
- These account for all adverse health effects known to cause harm, ***regardless of mechanism, device, EMF exposure frequency, duration etc***

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Thermal versus Non-thermal Mechanisms

- RF absorption in the body results in heat
- The effect of this heat needs to be (and is) accounted for in the ICNIRP guidelines
- For example



Acchoff & Weaver 1958

Thermal versus Non-thermal Mechanisms

- The question is
 - Does this mean that the guidelines DO NOT protect against non-thermal effects?
- The simple answer is **NO**
 - The guidelines look for any substantiated demonstration of harm due to RF, regardless of mechanism
 - e.g., the epidemiology research cannot comment on mechanism, and merely looks for RF/harm relations
 - ***Restrictions are based on the lowest RF exposure that causes harm, regardless of mechanism***

Why is there confusion?

- Terminology is often used in different ways
- Some refer to exposure levels that do not exceed ICNIRP/IEEE guidelines as ‘non-thermal’, even if they are thermal (i.e. can’t occur without temperature rise)
 - But the guidelines set exposure restrictions below those required to cause any substantiated adverse health effects, and so by that definition, no such non-thermal health effects would be possible
 - The claim would merely be that there are adverse health effects that the guidelines have missed (i.e. the thermal/non-thermal distinction would not be relevant)

Why is there confusion?

- Some refer to the guidelines as ‘thermal guidelines’, which some interpret as meaning that non-thermal effects are not outside of their scope
 - But as the guidelines set exposure restrictions regardless of mechanism, this can only meaningfully refer to the fact that the lowest exposure to cause harm, happen to be thermal
 - e.g. they are thermally-based, in the sense that the values are derived from the most sensitive (thermal) effects
 - But this does not mean that there are non-thermal effects that have not been protected against
 - i.e. if a non-thermal effect was found below the restrictions, then the restrictions would be reduced to account for those

Conclusion

- The only sense in which the ICNIRP guidelines are thermal is that the lowest exposure levels known to cause harm, do so via thermal mechanisms
- All potential adverse health effects are considered and protected against, regardless of mechanism



Conclusion

- The issue of thermal versus non-thermal doesn't further our discussion regarding 5G and health
- It is important to focus on what the science itself has found, and whether harm has been verified, or is predicted, for exposures relevant to 5G

