

ICNIRP and the new RF guidelines

(and some answers to questions raised)

Eric van Rongen

Vice-chair, International Commission on Non-Ionizing Radiation Protection (ICNIRP)

What is ICNIRP?

- Independent group of scientific experts - members are not affiliated with commercial or industrial enterprises (DoI's on website)
- Multidisciplinary
- Balanced in terms of geography and gender
- Official relationship with WHO, ILO, further relationships with other international organizations (WMO, EC, CIE, ICOH, IEC,...)
- Registered not-for-profit
- Members not paid

2020 RF guidelines: scope

- Limit exposure to radiofrequency EMFs (100 kHz – 300 GHz)
- Provide protection against adverse health effects to humans under realistic conditions
- Consider occupational and general public exposure
- Consider direct and indirect exposure (but only contact with charged objects)
- Not included:
 - Electromagnetic interference
 - Exposure for medical purposes
 - Compliance issues (e.g. measurements)

Scientific basis

- Draft WHO RF EHC, SCENHIR, SSM reports + original papers not included
- Extensive body of relevant literature, ranging from cell studies to cancer epidemiology
- (Draft) reports only used as sources of scientific data
- All data considered, conclusions in the evaluation of scientific data are from ICNIRP

Conclusions from scientific data

- Only evidence of potentially harmful effects from:
 - temperature elevation above thresholds
 - nerve stimulation (described in ICNIRP 2010 ELF Guidelines; not considered separately here)
- No evidence that RF EMF causes diseases such as cancer
 - results of US, Italian studies (animals, lifetime exposure) not convincing (Note with ICNIRP comments published)
- No evidence for other non-thermal adverse health effects of RF EMF
- Non-thermal biological effects possible; these
 - do not form a basis for exposure restrictions
 - may occur also as a result of other, normal activities
- A biological effect is not necessarily an adverse health effect!

Cumulation

- Of effects:
 - no cumulation of adverse health effects with exposure time
 - time for compliance assessment based on time to reach thermal balance
 - limits considered safe levels for 24/7 exposures
- Of exposure:
 - contribution of different sources has to added to assess total exposure
 - summation formulas in guidelines

Signal types

- Guidelines apply:
 - to all signal types (e.g. continuous, modulated, pulsed)
 - to all signal forms, omnidirectional and beams
- It is the total exposure that matters

5G

- RF guidelines are technology-independent and apply also to 5G
 - ICNIRP did not search for 5G-specific studies
 - no need for that
- Not many differences with 1998 guidelines for lower frequencies (700 MHz, 3.5 GHz)
- Differences for 26 GHz:
 - whole-body SAR applies
 - local exposure: absorbed power density, dependence of surface area

Populations

- General population covers all people not considered ‘workers’
 - applied uncertainty / safety factors very large
 - resulting exposure guidelines also cover sensitive groups such as children, elderly, sick
- Animals / plants
 - not enough scientific information to set specific exposure guidelines
 - assumption: human levels protective for animals / plants
 - dedicated Working group established to get into more detail

Thank you for your attention

Questions?