HEALTH PROTECTION AGAINST NON-IONIZING RADIATION:

PRINCIPLES AND PRACTICES - The ICNIRP view -

Maria Feychting

Courtesy of
Dr. Gunde Ziegelberger
ICNIRP Scientific Secretary
What is ICNIRP?

- independent group of experts (on a voluntary basis) - members are not affiliated with commercial or industrial enterprises
- multidisciplinary
- balanced in terms of geography and gender
- emanated from IRPA/INIRC in 1992
- formally recognized by WHO and ILO, further relationships with other international organizations (WMO, EC, CIE, ICOH, IEC,...)
- registered not-for-profit
ICNIRP’s mission

- to provide guidance and advice on the health hazards of NIR
- to develop science-based guidelines on limiting exposure to NIR
- to focus on people (general public, workers, patients) and the environment

not addressed:
- product standards
- measurement techniques
- compliance testing
- interference with medical devices
- risk management approaches such as precaution

Infra-/ultrasound

Static and low frequency: 0 – 100 kHz
Radiofrequency Microwave: 100 kHz – 300 GHz
Optical radiation: 100nm – 1nm

ICNIRP’s view on NIR protection - 2016
ICNIRP 2016-2020

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ICNIRP’s view on NIR protection - 2016
Broadening the expertise…..

ICNIRP (main commission) final responsibility

Scientific Expert Group

Project Groups

ICNIRP’s view on NIR protection - 2016
ICNIRP’s view on NIR protection - 2016
ICNIRP activities

reviews

open workshops:
• to inform the public, etc.
• to get scientific input

www.icnirp.org
ICNIRP's view on NIR protection - 2016

**THRESHOLDS OF THERMAL DAMAGE**

📅 26-28 May 2015
📍 Istanbul, Turkey

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**UPCOMING WORKSHOP**

📅 Nov 2016

An International Workshop on Non-Ionizing Radiation Protection will take place on 2nd December 2016 in Tokyo, Japan. ICNIRP technically co-sponsors the workshop which is financially sponsored by National Institute of Information and Communications Technology (NICT). The main topics of the workshop are the revision of the ICNIRP RF guidelines and NIR protection related to 5G system. The workshop is open for scientific experts of NIR. Please contact nic-nr.wa@stage.at, if you consider attending the workshop. Further information regarding the program and venue are available here.

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**8TH INTERNATIONAL NIR WORKSHOP**

📅 9-11 May 2016
📍 Cape Town, South Africa

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**Introduction**

The International Commission on Non-Ionizing Radiation Protection (ICNIRP) will hold its 8th International NIR Workshop in conjunction with the 50th anniversary of the Cape Town International Convention Centre, Cape Town, South Africa, 9-11 May 2016. This landmark event signifies the dedicated co-operation and collaboration between ICNIRP and IFRP in order to optimize the safe and effective use of resources by practitioners of radiation protection. Participants in both the ICNIRP workshop and the IFRP congress will be granted discounted...
Guidelines - Sequence of actions (using RF as an example)

1. Identification of gaps in knowledge resulting in a research agenda: last time for RF in 2010

2. National research programmes

3. Synthesis of overall knowledge:
   - comprehensive reviews by ICNIRP (Blue Books) (and other national radiation protection authorities)

4. Evaluation of carcinogenicity:
   - IARC Monographs (for RF in 2012)

5. Overall evaluation of health hazard:
   - EHC-Document open consultation is closed
   - Working group expected in 2017

6. Revision of recommendations:
   - (can be expected in 2017)
Fundamentals of ICNIRP Guidelines

- Procedures and criteria are defined *a priori*
- Recommendations are based on science - no consideration for economic or social issues
- Only established effects (replicated and/or consistent across different study designs) are considered

Not to forget (not specific for EMF, but intrinsic to science):
- evidence ≠ proof
- biological effect ≠ health effect
- statistical association ≠ causality
- no single study design can prove the absence of a health risk
- fear can cause health problems
Steps in the development of guidelines

- **review of the scientific literature** (peer-reviewed studies)
- establishment of **health-related effects**
- **identification of the critical effect** (health effect that occurs at the lowest level of exposure)
- considering **reduction factors**
- setting **basic restrictions** (in RF-range: specific absorption rate (SAR) that ensures that no health effects occurs), *difficult to measure*
- derivation of **reference levels** (under worst case scenarios; compliance with reference level ensure compliance with basic restrictions), *easy to measure*
Current state of knowledge

- nerve-stimulating and thermal effects are the **critical effects** in the ELF and RF-range, respectively
- these effects are acute in nature
- they occur above a certain, well-known threshold (ICNIRP’s exposure limits aim at preventing the critical effect)
- so far, no long-term health effects due to ELF and RF-exposure are **established**
Many thanks for your attention!