

ICNIRP ACTIVITIES

REPORT 2021

This report summarizes the activities of the Commission for the period between 1st January 2021 and 31st December 2021.

Science

Work Plan 2020-2024

A range of project groups are currently underway that will provide important information for improving non-ionizing radiation health and safety.

Statements on RF Knowledge Gaps

A Project Group on "Knowledge gaps identified during guidelines' development" was set up under the leadership of Dr Carmela Marino to draft a research agenda for the whole NIR spectrum, based in particular on the gaps identified during guidelines development. The ICNIRP research agenda aims at identifying knowledge gaps relevant for giving protection guidance. After publication in 2020 of the ICNIRP Statement on Gaps in Knowledge Relevant to the "Guidelines for Limiting Exposure to Radiofrequency Time-Varying Electric and Magnetic Fields (1 Hz - 100 kHz) 2010" ([Health Physics 118\(5\):533-542; 2020](#), available on the [ICNIRP website](#)), the Project Group is working now on developing a similar document on RF Knowledge Gaps.

Revision of the Statement on Laser Pointers

The Project Group on "Laser Pointers" under the leadership of Dr Tsutomu Okuno is in charge of the revision of the ICNIRP Statement on Laser Pointers (Health Phys 77(2):218-220:1990).

Handheld laser products, often called laser pointers, sold especially online, sometimes have potentially hazardous output power but are improperly labelled for a lower hazard class. Such products have caused retinal injuries. Thus, there is a concern over the safety of handheld laser products. ICNIRP provides information on hazards posed by handheld laser products in its statement (Health Phys 77(2):218-220:1990) in order to increase awareness of laser hazards with the aim of preventing incidents involving retinal injuries, visual disturbances and other adverse effects caused by handheld laser products and to address the public concern over safety of these products. The purpose of the revised statement is to update this guidance.

Short Wavelength Light and Circadian Rhythm

The Project Group on "Short Wavelength Light" under the leadership of Dr Sharon Miller is developing a statement on the effects of short wavelength light on circadian rhythm.

Over the past 20 years exposure to short wavelength light (SWL) has rapidly increased, in particular through the extensive use of smartphones and tablets. The ICNIRP Project Group is to address the issue related to possible adverse effects of SWL on the human circadian timing system and its impact on sleep-wake rhythms. The statement will provide an overview of the current use of SWL sources, their emission characteristics and the physiological changes and potential adverse health effects resulting from exposure. Based on this, further guidance will be provided as well as recommendations for future research to adequately assess potential adverse effects of SWL.

Effects of NIR on the environment

Under the leadership of Dr Eric van Rongen, a Project Group will undertake a statement on the effects of NIR on the environment (plants and animals in their natural environment).

As identified by ICNIRP in 2000 and confirmed more recently in 2019 by the German Federal Office (BfS), whether there are effects of EMFs on the living environment is yet to be determined, with this uncertainty largely due to the lack of adequate data. Accordingly, the ICNIRP Project Group intends to present an overview of the environmental effects of EMF and, where possible, analyze whether the current human exposure guidelines are sufficiently protective for plants and animals in their natural environment. Following the exploratory and constitutive phase, it is expected that the PG will start its work in the second half of 2022.

Revision of the Laser Guidelines

In light of the 2020 ICNIRP Comments on the Laser Guidelines and recent data, a Project Group under the leadership of Dr Tsutomu Okuno is in charge of revising the 2013 ICNIRP Laser guidelines (Health Phys 105(3): 271-295: 2013). A fact sheet summarizing the changes is also expected.

Lasers are used in a wide variety of industrial, consumer, scientific, and medical applications, including optical fiber communication, welding, cutting, drilling, distance measurement, entertainment, optical computing, and surgery. To protect the general population and workers from exposure to laser radiation, ICNIRP provides guidelines which sets the maximum levels of exposure permitted to avoid adverse biological effects to the eyes and the skin. The guidelines also assist with the development of principles of protection against laser radiation hazards.

In 2013 ICNIRP published guidelines on limits of exposure to laser radiation of wavelengths between 180 nm and 1,000 μm (ICNIRP 2013). Since then the application of the limits has shown that some additional guidance was needed for complex exposure cases. These were addressed in the 2020 ICNIRP Statement “Comments on the 2013 Laser Guidelines”. As mentioned in that Statement, the revision of the guidelines will also aim to provide additional guidance in relation to the limits for long term exposures in the far ultraviolet wavelength range below 280 nm, the definitions of the exposure limits for small-spot exposures of durations less than 1 ns, and the determination of specific reduction factors and associated exposure limits, with particular consideration of multiple pulses. This revision will mainly reflect available new data identified as necessary by ICNIRP.

Revision of the LF Guidelines (≤ 10 MHz)

A Project Group under the leadership of Dr Rodney Croft will develop an updated set of low frequency guidelines, combining, and relative to that of ICNIRP 2009 (static magnetic fields), ICNIRP 2010 (low frequency fields) and ICNIRP 2014 (induced electric fields). Where appropriate, the underlying logic of the 2020 RF guidelines will be used. The output of this Project Group may subsequently be combined with the 2020 RF guidelines to form a single set of guidelines (up to 300 GHz). Note that this Project Group will not review the dosimetry literature, as that is covered by a separate Project Group (low frequency dosimetry).

LF Dosimetry Review

A systematic review of the LF dosimetry and related physics will be prepared by a Project Group led by Dr Akimasa Hirata. This will provide the dosimetry basis for the revision of the LF Guidelines (see

above). Following the exploratory and constitutive phase, it is expected that the PG will start its work in the second half of 2022.

Exposure to Ultrasound

A Project Group, under the leadership of Dr Ken Karipidis, is to investigate whether the available data on ultrasound exposure require the development of exposure guidelines or a general statement on safety, and to prepare a recommendation for the development of either guidelines or a statement for consideration by the ICNIRP Commission.

Protection of patients from exposure to ultrasound for medical purposes is controlled through international standards and national regulations. ICNIRP has published recent statements on the use of ultrasound for diagnostic (Health Phys 112(3):305–321; 2017) and cosmetic purposes (Health Phys 118(5):562–579; 2020). Protection against airborne ultrasound has not been evaluated for a while, and interim guidelines on human exposure were published by the International Radiation Protection Association in 1984.

Following the exploratory and constitutive phase, it is expected that the PG will start its work in the second half of 2022.

Long-Term Effects of Chronic UV Exposure

A Project Group, led by Dr Nigel Cridland, is to review existing evidence in relation to long-term effects on the eye and the skin for which chronic exposure to UV may be a contributing factor. These will include effects on the cornea/conjunctiva (pterygium, pingueculae and climatic droplet keratopathy), the lens (cataract), the retina (macular degeneration) and the skin (photoageing and cancer). For ocular effects, the Project Group will consider whether the evidence is sufficient to enable the formulation of advice on restricting exposure and whether this would be substantively different from existing advice on the avoidance of adverse effects from acute exposure. For effects on the skin, which is already considered in the existing guidelines, the project group will consider whether advances in knowledge over the last 15 years are sufficient to justify any changes to the guidelines.

Following the exploratory and constitutive phase, it is expected that the PG will start its work in the second half of 2022.

Publications

Journal Publications

[ICNIRP Response to: John William Frank “Electromagnetic fields, 5G and health: what about the precautionary principle?” 10 June 2021](#)

Website Publications

[ICNIRP Note: Response to: John William Frank “Electromagnetic Fields, 5G and Health: What About the Precautionary Principle?” J Epidemiol Community Health 2021. DOI:10.1136/JECH-2019-213595](#)

Collaboration

Collaboration with International Organizations

World Health Organization (WHO)

ICNIRP is officially recognized by the World Health Organization as a collaborative NGO for all aspects of non-ionizing radiation protection within the Framework of Engagement with Non State Actors (FENSA). The collaboration is mainly related to WHO's International EMF project, and INTERSUN Program.

Within the cooperation, ICNIRP provides input to support the development of guidance on NIR exposure.

European Commission (EC)

ICNIRP advances radiation protection science throughout Europe and the World, in particular through the support provided by the European Union Programme for Employment and Social Innovation ("EaSI") 2014-2020. ICNIRP provides, upon request, scientific advice for the evaluation and interpretation of scientific data, and for their dissemination, especially to the Directorate General "Employment, Social Affairs and Inclusion".

This year ICNIRP provided technical input related to the revision of the EU Directive 2013/35/EU on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields) and the EU Directive 2006/25/EC - artificial optical radiation of 5 April 2006 on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents.

International Labour Organization (ILO)

The partnership between ICNIRP and ILO dates back to 1994 when ICNIRP was admitted on the ILO's Special List of Non-Governmental Organizations. Since then several publications have been jointly issued, particularly in relation to EMF and Ultraviolet radiation. Collaboration also is set up in an ad hoc manner on topics discussed within the radiation protection community.

International Radiation Protection Association (IRPA)

ICNIRP and IRPA are linked through their Charter and their cooperation is within this framework. IRPA provides information on ICNIRP activities on the IRPA website regarding ICNIRP publications, current online consultations, the organization of conferences, and its elections. IRPA is invited to provide comments on the ICNIRP guidelines drafts and to provide nominations at ICNIRP Commission elections.

In 2021, ICNIRP participated in the IRPA 15th International Congress which was held as a hybrid event in Seoul, Korea 18-22 January 2021. The ICNIRP Chair and Commissioners, Rodney Croft, Nigel Cridland and Ken Karipidis contributed to the NIR Special Session each with one presentation, respectively titled 5G and NTP EMF Effects - What is New Since 4 Years Ago; UV and Optical Radiation; and Cosmetic Use of NIR.

Other collaboration

As part of its mission, ICNIRP provides scientific advice on NIR protection in many countries worldwide (see below list of meetings and conferences). These activities are performed mostly

through participation in seminars, round tables, the provision of lectures in training courses and scientific conferences, as well as meetings with protection agencies.

Workshops and Meetings organized by ICNIRP or with ICNIRP participation

As a widely recognized international organization in non-ionizing radiation protection, ICNIRP is invited to participate in, or co-sponsor, many international scientific events. In the period covered by this report, ICNIRP has organized and/or contributed to the following meetings:

Participation of ICNIRP representatives in Workshops, Scientific Meetings and Courses

- NIR Special Session - IRPA15
5G and NTP EMF Effects – What is New Since 4 Years Ago
UV and Optical Radiation
Cosmetic Use of NIR Hybrid - Seoul, Korea 18-22 January
- ANSES Dialogue Committee – Radiofrequencies and Health Online 1 April
- ITU Regional Assessment for Europe on EMF
Exposure Limits and Risk Communication Challenges Online 27 April
- ITU Forum on Human Exposure to EMFs due to
digital technologies Online 10 May
- ICNIRP EC DG EMPL Meeting - EU Directives Online 27 May
- 16th European Spectrum Management Conference Online 21-23 June
- 2021 IEEE International Microwave Symposium Online 22 June
- URSI-GASS 2021 – Commission-K Tutorial Hybrid- Rome, Italy 1 September
- 5th CIS & CEE Spectrum Management Conference 2021 Online 20-22 September
- BEREC Workshop: How best to promote
science based EMF limits recommended by experts Online 21 September
- ITU Digital World – 5G
fueling digital transformation today - or tomorrow? Online 8 September

Administration, Membership and & Meetings

Commission meetings

Because of the pandemic situation all Commission and Project Group meetings were staged online. A Commission meeting dedicated to ongoing business took place on 10 May. At the AGM on 9-11 November, besides the matters required by the statutes, in particular the approval of the budget, the main topics were the screening of the DOIs 2021-2022, the election of new SEG members work progress reporting by the Project groups and the collaboration efforts. In particular a new draft paper handed by the PG Communication to the Commission on the Role of ICNIRP was discussed and approved for publication.

ICNIRP Main Commission, PG and Board meetings

- ICNIRP PG Communication Online 22 January

• ICNIRP PG RF Review	Online	7 April
• ICNIRP PG Ultrasound	Online	15 April
• ICNIRP PG RF Knowledge Gaps	Online	20 April
• ICNIRP Commission Meeting	Online	10 May
• ICNIRP PG RF Knowledge Gaps	Online	17-25 May
• ICNIRP Internal Preparatory Meeting - EU Directives 2006/25/EC, 2013/35/EU	Online	25 May
• ICNIRP PG RF Review	Online	1 June
• ICNIRP PG Ultrasound	Online	22 September
• ICNIRP Board	Online	4 October
• ICNIRP PG Communication	Online	7 October
• ICNIRP PG Communication	Online	20 October
• ICNIRP PG UV Chronic Effects	Online	28 October
• ICNIRP PG LF Guidelines	Online	8 November
• ICNIRP PG Short Wavelength Light	Online	8 November
• ICNIRP PG UV Chronic Effects	Online	28 October
• ICNIRP Annual General Meeting	Online	9-11 November
• ICNIRP PG RF Knowledge Gaps	Online	11 November
• ICNIRP PG RF Review	Online	28 November

Governance

Declaration of personal interests (DOI)

The declarations of personal interests are completed by all Commission and SEG members on a yearly basis. The declarations of personal interests are screened and evaluated by the Board and Commission with the objective of safeguarding ICNIRP's scientific independence. All declarations of personal interests are available on the ICNIRP website at www.icnirp.org. In 2021 a new DOI form was introduced which allows for a more formalized and transparent screening with the evaluation results now being publicly available.

Budget

ICNIRP funding stems from public and governmental agencies only. In 2019 the ICNIRP activities were supported by the German Federal Ministry for the Environment (BMUB), the European Union Programme for Employment and Social Innovation ("EaSI") 2014-2020, and the International Radiation Protection Association (IRPA). In addition, the Ministry of Health of New Zealand (NZ MoH) and the Australian Radiation Protection and Nuclear Safety Authority (ARPANSA) also provided a general subsidy.

ICNIRP's annual financial reports are screened for tax purposes every three years. The below tables are indicative.

Financial Report 2020* - Amounts in Euro		
Income		
Subsidies		173.514,02
Workshops and Books		923,55
Total Income		174.437,57
Expense		
Staff & Training	- 95.914,39	
Meetings & Workshops	- 1.452,69	
Publications & Communication	- 20.176,58	
Insurance & Administrative Expense	- 5.153,77	
Total Expense	- 122.697,43	
Finance Income		0,00
Finance Costs	- 335,20	
Financial results	- 335,20	
Result of the Year	51.404,94	

Financial Report 2021* - Amounts in Euro		
Income		
Subsidies		78.787,25
Workshops and Books		439,31
Total Income		79.226,56
Expense		
Staff & Training	- 96.257,67	
Meetings & Workshops	- 360,00	
Publications & Communication	- 4.375,41	
Insurance & Administrative Expense	- 2.209,68	
Total Expense	- 102.842,76	
Finance Income		0,00
Finance Costs	- 330,79	
Financial results	- 330,79	
Result of the Year	- 23.946,99	

* The above tables are indicative. Subsidy payments and expenses related to an activity period may be reported in the next period.