ICNIRP
INTERNATIONAL COMMISSION ON NON-IONIZING RADIATION PROTECTION

Public Consultation Template - ICNIRP Draft RF Guidelines, Appendix A, Appendix B

Comments to be uploaded until 9.10.2018

Dear Contributor,

Thank you for participating in the public consultation of the ICNIRP draft guidelines.
Please note that it is important that ICNIRP understands exactly the points that you are making. To facilitate our task and avoid misunderstandings, please:

- be concise
- be precise
- provide supporting evidence (reference to publication, etc.) if available and helpful.

How to complete the comments table:

Please use 1 row per comment. If required, please add extra rows to the table.
This response document asks you to provide your 'comment', your 'proposed change', and the 'context' to this comment and proposed change. What is meant by these is the following:

Comment : A brief statement describing the issue that you have identified (and that you would like ICNIRP to take into account in the final version of the guidelines).
Proposed Change: A brief statement describing how you would like the document changed to account for this issue.
Context: A brief statement identifying relevant documents in support of your comment and proposed change.

Please, provide your details below as per the online form and the provision of the privacy policy

Last name, first name: Redmayne, PhD	Email address:	Affiliation (if relevant): Victoria University of Wellington
If you are providing these comments officially **on behalf** of an organization/company, please name this here: This is an independent response		
☒ I hereby agree that, for the purpose of transparency, **my identity (last and first names, affiliation and organization where relevant) will be displayed** on the ICNIRP website after the consultation phase along with my comments. ☐ I want my comments to be displayed anonymously.		

	Document (Guidelines, App A, App B)	Line Number #	Type of comment (General/ Technical/ Editorial)	Comment. Proposed change. Context.
1	Guidelines	All	General	It is alarming to see that those involved in preparing the new ICNIRP draft guidelines have stuck to the old approach of regarding heat and shock related damage from sufficient power intensity over a short period as the only cause of health effects. There is a vast body of independently replicated, quality research evidence indicating biological effects induced by exposures with very much lower intensities than relevant to heat damage. Many of these are known to be able to lead to diseases (see example below). The non-ionising radiation limits need to be set on the basis of levels known to cause bio-effects, as for ionising radiation. The evidence available indicates that the proposed document needs to be completly overhauled using a new approach The full range of quality evidence of research over the last 20 years needs to be considered in addition to earlier research. A new approach is needed that prevents bio-effects after exposures at observed extremely low intensities when these effects are known to lead to ill-health generally and/or specific diseases
2	Guidelines	54-55	General	„Adverse health effect thresholds“ is a naive approach to a complex process that leads up to most disease/ adverse health conditions. Clearly it is not acceptable to overlook bio-effects which are known to be able to lead to disease/ adverse health conditions. An example is the induced production of reactive oxygen species and oxidative stress. There are many possible citations but this abstract will suffice: „This review aims to cover experimental data on oxidative effects of low-intensity radiofrequency radiation (RFR) in living cells. Analysis of the currently available peer-reviewed scientific literature reveals molecular effects induced by low-intensity RFR in living cells; this includes significant activation of key pathways generating reactive oxygen species (ROS), activation of peroxidation, oxidative damage of DNA and changes in the activity of antioxidant enzymes. It indicates that among 100 currently available peer-reviewed studies dealing with oxidative effects of low-intensity RFR, in general, 93 confirmed that RFR induces oxidative effects in biological systems. A wide pathogenic potential of the induced ROS and their involvement in cell signaling pathways explains a range of biological/health effects of low-intensity RFR, which include both cancer and non-cancer pathologies. In conclusion, our analysis demonstrates that low-intensity RFR is an expressive oxidative agent for living cells with a high pathogenic potential and that the oxidative stress induced by RFR exposure should be recognized as one of the primary mechanisms of the biological activity of this kind of radiation” (Yakymenko I, et al.: **Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation**. *Electromagnetic Biology and Medicine* 2016, **35**(2):186-202) ROS and resulting oxidative stress are linked to several diseases including some cancers and Alzheimers (e.g. Poprac Pet al: **Targeting Free Radicals in Oxidative Stress-Related Human Diseases**. *Trends in Pharmacological Sciences* 2017, **38**(7):592-607.)

				This is just one of many possible bio-effect examples. Insert your proposed change. Context: The importance of acknowledging effects of extremely low exposures
3	Guidelines	Title 296-297	Technical	The proposed range of frequencies for the guidelines is not scientifically supportable, even by thermal standards. One should not set guidelines using the thermal threshold approach for frequency ranges that have had no research on their effects on body core temperature. (100 kHz to 6 GHz) Separate guidelines should be prepared for mm wave exposures. The thermal core temperature research won't be necessary providing the aim is to prevent the bio-effects and health effects of much lower exposures, which should apply to both environmental exposures and those resulting from transmitting devices which are frequently used against the body
4	Guidelines	321-344	Editorial	Lines 338-340 are presented in the reverse order from the passage before and after Put the passage in the same order (type 1 then type 2) The mis-ordering is misleading, but the greater picture is that the guidelines are not safe
5	Guidelines	327	General	The eyes are some of the most vulnerable tissues if one is using a thermal approach Insert your proposed change. New technologies often put the tranmitter very close to the eyes. Eyes need a more, not less, stringent approach
6	Guidelines	And 467	Technical	How were factors of 10 and 50 selected? The meeting at Wollongong in 2014 revealed there had not been a scientific basis for this. One needs to be given Insert your proposed change. Explain the context of your comment.
7	Guidelines	479-501	Technical	What is the scientific basis for the reduction factors of only 2 and 10 for head, torso and limb exposures? Insert your proposed change. Explain the context of your comment.

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8	Guidelines	Pp14-18	Technical	The basic restrictions and reference levels are many times too high to achieve the main objective Insert your proposed change. Context: The importance of permitted exposures being low enough that they do not trigger bio-effects when said effects are known to lead to disease or ill-health generally

9	Appendix B	92-138	General	The typical short-term exposure method used for evaluating EHS (IEI_EMF) is equivalent to asking participants in an allergy study whether there is a high pollen count after a few minutes outside. Some react quickly and others don't, or are only react to certain pollens. However, subjective research approaches are becoming less necessary. Objectively measured bio-effects, **also being health effects in several cases,** in those who are electrohypersensitive have been published. Research is still limited but includes: • Belpomme D, et al: **Reliable disease biomarkers characterizing and identifying electrohypersensitivity and multiple chemical sensitivity as two etiopathogenic aspects of a unique pathological disorder**. *Reviews on Environmental Health* 2015, **30**(4):251-271. Wjpse , who concluded that test indicated, "Inflammation-related hyper-histaminemia, oxidative stress, autoimmune response, temporal lobe capsulothalamic hypoperfusion and Blood Brain Barrier opening, and a deficit in melatonin metabolic availability, suggesting a risk of chronic neurodegenerative disease". • de Luca C, et al: **Metabolic and genetic screening of electromagnetic hypersensitive subjects as a feasible tool for diagnostics and intervention**. *Mediators of Inflammation* 2014, who tested 153 electrohypersensitivity, 147 multiple chemical sensitivity, and 132 Control participants. Diagnosis involved metabolic pro-oxidant / pro-inflammatory tests for alterations in blood, and selected genetic tests. Results found: - Distinctively increased **plasma coenzyme-Q 10 oxidation ratio** - Significantly altered distribution-versus-control of the **CYP2C19*1/*2SNP variants** - Combined presence of genotype **Genotype (null)GSTT1 + (null)GSTM1 variants** o confers **9.7 times higher risk of EHS** than other GSTM1 GSTT1 combinations This is not to deny that there may also be those with a psychological response to non-transmitting antennae. . Insert your proposed change. Context: The importance of permitted exposures being low enough to avoid effects of extremely low „non-thermal" exposures when said effects are known to lead to disease or ill-health generally

10	Appendix B	All pages	General	The review is very poorly referenced with many claims not given a citation and therefore unable to be checked. Insert your proposed change. Context: The academic process of reviewing literature
11	Appendix B	15-25	General	Despite the sentence in line 21 starting with 'accordingly', the WHO 2014 review which has been used is not the one referred to in line 15. Remove reference to the upcoming WHO review. Context: Material reviewed
12	Appendix B	47-54	General	Limiting a review of the literature principally to 2 reviews is entirely unsatisfactory, especially in a field with thousands of publications in the peer reviewed literature. If the current situation is to be assessed through reviewing reviews, then I believe this needs a wide representation and should at least include those with a low proportion of reviewers who appear in other review panels, and few overlapping aspects other than expertise in the subject, as this will most likely cover a broader range of the literature and confirm whether or not a broader range of reviewers reach the same conclusions. To this end, certain chapters of the BioInitiative Report (2007, 2012) could be included. This very extensive document (1557 pages), presented chapters each prepared by individual experts (called sections in the document) on an area of their speciality. Each drew their own conclusions, many of which were subsequently published as peer-reviewed papers in a special issue of Pathophysiology 2009. These papers, and more recent studies by these authors, would be well-included in the review as a beginning step to a more representative review and to bring a better balance. Other reviews by authors other than those involved with WHO and SCENIHR should also be included. Insert your proposed change. Context: The importance of reviewing a representative balance of the literature.
13	Appendix B	Line 329 onwards: section 9	General	Cancer/tumours. The claim of 'no substantiated evidence' acts as a block to scientific progress when given with no/thin explanation, little reasoning, or (in many cases) citation of the studies referred to both here and in most other sections of Appendix B Necessary changes are extensive and should be intrinsic to the review process Context: The importance of a robust review process

14	Appendix B	Line 364 to 367	General	The NTP and Ramanizzi studies have been commented on by a peer review panel and other specialists in this field with starkly different conclusions than those provided here. Context: The importance of an unbiased review process by a panel which includes specialists in the relevant fields and who are qualified to comment

15	Appendix B	Line 406	General	The Precautionary Principle as stated in 1998 the Wingspread statement says, "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically." This means that we should not wait until cause and effect relationships are fully established – at that point the action would no longer be precautionary. With respect to tumours, "indications of an increased risk in high- and long-term users from Interphone and other studies are of concern. There are now more than 4 billion people, including children, using mobile phones. Even a small risk at the individual level could eventually result in a considerable number of tumours and become an important public-health issue" (Cardis E, Sadetzki S: **Indications of possible brain-tumour risk in mobile-phone studies: should we be concerned?** *Occupational and Environmental Medicine* 2011, **68**(3):169-171). It is high time to put a precautionary approach to exposure standards in place now. With regard to exposure from hand held devices, "many public health practitioners have moved from the theoretical level (adoption of the precautionary principle) to an active phase of introducing regulations, with specific emphasis to various populations" (Sagi OI, Sadetski S: **Determining health policy for sensible mobile phone use: current world status**. *Harefuah* 2011, **150**(3):216-220, 306). Context: The appropriateness of putting the precautionary principle in place now bearing in mind indications in research to date