

ECRR

EUROPEAN COMMITTEE ON RADIATION RISK (ECRR)
COMITE EUROPEEN SUR LE RISQUE DE L'IRRADIATION
ECRR Non-Ionizing Radiation Risk Committee
AVENUE DE LA FAUCONNIERE 73
B1170 BRUXELLES
BELGIUM
www.euradcom.eu

Prof. C. Busby
Scientific Secretary
Green Audit
2 Bridge St
Bideford EX39 2BU
UK

Tel: +44 1237 42 35 05
+44 7989 428833
christo@greenaudit.org

ECRR Non-Ionizing Radiation Risk Committee Proposed Unit to quantify exposure. Proposed Exposure Limits.

The new ECRR Non-Ionizing Radiation Risk Committee (Committee) was appointed as a subcommittee to the main European Committee on Radiation Risk (ECRR) in November 2018 to assess and propose regulations on risk from non-ionizing radiation sources, particularly Mobile Phone exposures. Sufficient evidence has accumulated in the last 20 years to show unequivocally that exposures to Radiofrequency (RF) sources cause a wide range of serious health detriments including cancer.

The call for truly protective limits for exposure to Electromagnetic Fields

The Committee addresses the current call of medical doctors and scientists for development and consideration of safe medical guidelines [1], that are independent of conflict of interests in terms of direct or indirect ties to industry, that represent the state of medical science, and that are truly protective to all living systems.

The current adviser of governments on the levels of non-ionizing radiation exposure the International Commission on Non-Ionizing Radiation Protection (ICNIRP), ICNIRP.org, has proven to have failed to act as the world's authority on non-ionizing radiation risk. ICNIRP is not independent of industry ties as it claims. Its opinions are not objective, not representative of the body of scientific evidence, but are biased in

favour of the industry, due to their reluctance to consider scientific findings of serious harms caused by RF.

The Committee is aware of a number of proposed mechanisms for objective measurements demonstrating effects at the cell and organism level but does not feel that there is a necessity at this stage to have to connect the biological links with the epidemiological findings.

It was a source of concern to the Committee that no official organisation has properly addressed the epidemiological and animal study evidence nor has there been any attempt to quantify exposure, similar to the case with ionizing radiation and the International Commission on Radiological Protection (ICRP), www.icrp.org, an authority that has been corrected by the ECRR ionizing radiation model [2].

Current ICNIRP practice is to limit power of cell-phones on the basis of Specific Absorption (SAR) rate of approximately 1.6W/kg. This permits very large exposures since the individual behaviour is not included.

Concerns exist about the failure of authorities to take action over the increasing exposures to RF radiation [3, 4]

Non-ionising Radiation Absorbed Dose (Nrad)

Accordingly, the committee has developed a tool for quantifying cumulative exposure. A new quantity is hereby defined, the Nrad (Non-ionising Radiation Absorbed Dose). One Nrad, is defined as an absorption of Radiofrequency (RF) energy by tissue equal to 1kJ per kg of tissue. The quantity is thus defined as energy per unit mass, just as the ionizing radiation units Gray and Rad are.

$$\text{Non Ionizing Dose (Nrad)} = \text{Energy (kJ)} / \text{Tissue mass (kg)} \dots (1)$$

The Dose is cumulative as is the case with ionizing radiation and effects are considered to present stochastic (probabilistic) harm. The practical assessment of the Dose in Nrad is considered in terms of the tissue volume which exhibits the maximum dose in space and in time, that is the “hotspot” energy density.

The Committee has assessed the evidence, particularly evidence from recent lifetime rodent irradiation experiments in the USA [5] and Italy [6] and is hereby proposing a provisional safe Dose limit of 150 Nrad per year for adults and 75Nrad per year for children under the age of 12. This value is suggested on the basis of the argument below, but the Committee invites inputs from interested parties and will make a firm recommendation in 3 months.

The rodent experiments show that a 1-year exposure to 1.5W/kg with a 50% duty cycle causes a wide range of cancer and benign tumour development. This translates into 64.8 kJ/Kg cumulative annual non-ionizing dose (Nrad) per day for 1 Year; an annual Dose of 23,650Nrad. By comparison, a 1-hour exposure to mobile phone radiation from a typical smartphone (Specific Absorption Rate SAR = 1w/kg) is 1.8Nrad.

The Committee employs the approach of the early health physicists to objective tissue responses to internal ionizing radiation and proposes an annual limit of 1/100th the annual dose that causes cancer in rodents (23,650Nrad) in the NIH study [3]. The proposed annual limit value of 1/100th of this is rounded up to 250Nrad.

Children absorb higher doses of electromagnetic radiation from RF devices than adults [7], which causes developmental errors. For children <12 the Committee proposes an annual limit of 10 - 100 Nrad depending on their age 7-12 years.

Survey data suggest that the average daily adult use of a smartphone is between 2.3 and 3.5 h. In convenience terms, these limits suggest that safe use of a smartphone should be restricted to 0.65 Nrad per day for adults which is an exposure of about 1h and for children the value depends on age 7-12 years and is 3-30 minutes.

The Committee position on children under the age of 6 years is that they should not be permitted to use mobile phones and that their exposure to other RF devices should be reduced as far as possible.

These limits must be applied on all RF emitting devices, including Wifi masts with mobile data generators, mobile phones, laptops, Wifi Modems, I-pads, smart meters and all other devices which cause RF exposure to humans.

Acknowledgement of limitations and necessary reform

The ECRR Non-ionising radiation dose (Nrad) model assesses a dose limit only in regard to cancer studies in rodents. It presently does not assess potential effects of RF on other conditions [8] or effects on other living creatures.

Health authorities of some governments have recently taken steps to reduce public exposure to radiofrequency electromagnetic radiation by regulating use of wireless devices by children and recommending preferential use of wired communication devices in general, but this shall be a coordinated international effort within a conceptual safety reform. Due to the most rapidly increasing anthropogenic RF environmental exposure effects since the mid-20th century, and the arriving technologies like the Internet of Things and 5G that would add millions more radiofrequency transmitters, a legal conceptual reform of RF safe exposure is urgently necessary and may imply specified areas being left free of RF exposure.

For the ECRR

Christopher Busby
Scientific Secretary
www.euradcom.eu

For responses from interested parties please email:

Roland von Malmborg, Stockholm, Sweden: info@ifrrr.org

References

- [1] Call for Truly Protective Limits for Exposure to Electromagnetic Fields (100 kHz to 300 GHz) by David O. Carpenter, Institute for Health and the Environment, NY, USA; Dr. Lennart Hardell, Department of Oncology, University Hospital Örebro, Sweden; Dr. Joel M. Moskowitz, Ph.D. School of Public Health, University of California, Berkeley, USA; Dr. Gerd Oberfeld, MD, Public Health Department, Salzburg Government, Austria. 30.11.2018. Link https://www.emfcall.org/the-emf-call/?fbclid=IwAR0tE-Mp3Ze6kYO_iYRpuD_6gUv2jwAVVCwnqnXS8PI-anPbUB6og4Mqlpl
- [2] 2010 Recommendations of the ECRR. The Health Effects of Ionising Radiation. Exposure at Low Doses and Low Dose Rates for Radiation Protection Purposes: Regulators' Edition. Edited by Chris Busby with Rosalie Bertell, Inge Schmitz-Feuerhake, Molly Scott Cato and Alexei Yablokov. Published on Behalf of the European Committee on Radiation Risk Comité Européen sur le Risque de l'Irradiation, Brussels by Green Audit, Aberystwyth 2010. ISBN: 978-1-897761-16-8 Link <http://euradcom.eu/ecrr-recommendations-2010/>
- [3] Igor Belyaev, Amy Dean, Horst Eger, Gerhard Hubmann, Reinhold Jandrisovits, Markus Kern, Michael Kundi, Hanns Moshhammer, Piero Lercher, Kurt Müller, Gerd Oberfeld*, Peter Ohnsorge, Peter Pelzmann, Claus Scheingraber and Roby Thill EUROPAEM EMF Guideline 2016 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses. Rev Environ Health 2016; 31(3): 363–397
- [4] Bandara P Carpenter DO (2018) Planetary electromagnetic pollution: it is time to assess its impact. Lancer Planetary Health 2(12) PE512-E514. 1 December, 2018. DOI:[https://doi.org/10.1016/S2542-5196\(18\)30221-3](https://doi.org/10.1016/S2542-5196(18)30221-3)
- [5] NTP Technical Report on the Toxicology and Carcinogenesis Studies in Hsd: Sprague -Dawley SD Rats exposed to whole body radiofrequency radiations at frequency (900MHz) and modulations (GSM and CDMA) used by cell phones. NTP TR595. Washington USA: National Institute of Health.
- [6] Falcioni L, Bua L, Tibaldi M et al. Ramazzini Institute (2018) Report of final results regarding brain and heart tumours in Sprague Dawley rats exposed from pre-natal life until natural death to mobile phone radiofrequency field representative of a 1.8GHz GSM-based station environmental emission. Environmental Research 165: 496-503
- [7] Robert D. Morris, L. Lloyd Morgan , Devra Davis (2015). Children Absorb Higher Doses of Radio Frequency Electromagnetic Radiation From Mobile Phones Than Adults. Environmental Health Trust, Teton Village, WY 83025, USA. Environmental Trust, Berkeley, CA 94709, USA Corresponding author: Robert D. Morris
- [8] Pallav Sengupta and Sulagna Dutta fr Mahsa University College; Edson Borges Junior; Elzbieta Krajewska-Kułak fr Poland. 2017. “Decline in sperm count in European men during the past 50 years.” (sperm concentration decreased 32.5%)

<https://www.researchgate.net/publication/316174214> Decline in sperm count in European men during the past 50 years Conference on declining fertility. Stockholm, Sweden, May 2018. Link <http://www.anova.se/ISS2018reg.htm>

[9] 1) China Behavior Rating System uses Sweden Microchip implants technology

<https://www.youtube.com/watch?v=3FMWcLZy3jU>

2) f ex 7000 work places use NUBA app already implemented in Sweden that registers workers place and working hours requiring constant data connection through the working day <https://nuba.se/>

[10] Kalina Christoff. Dehumanization in organizational settings: some scientific and ethical considerations. *Frontiers in Human Neuroscience*. *Front Hum Neurosci*. 2014; 8: 748. Published online 2014 Sep 24. doi: [10.3389/fnhum.2014.00748]

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4173804/>

[11] The European Union called HAARP project a global concern and passed a resolution calling for more information on its health and environmental risks.

<https://www.globalresearch.ca/haarp-secret-weapon-used-for-weather-modification-electromagnetic-warfare/20407>

[12] Harlan Girard . Institute of Science in Society, 29 May 2007: [Bio-electromagnetic Weapons: The ultimate weapon](#) . At the beginning of the article Harlan Girard says: "A weapon system that operates at the speed of light, that can kill, torture, enslave and escape detection. " More [directed energy weapons](#), [active denial system](#), [electronic harassment](#), [microwave hearing](#), [remote neural monitoring](#), [synthetic telepathy](#), [electronic torture](#), [voice-to-skull](#), i.e <http://www.electromagneticweapons.info/>

[13] 1) Roman V. Yampolskiy.2011. Leakproofing the Singularity Artificial Intelligence Confinement Problem. *Journal of Consciousness Studies*, 19, No. 1–2, 2012, pp. 194–214 <http://cecs.louisville.edu/ry/LeakproofingtheSingularity.pdf>

2) Artificial Intelligence Techniques Applied to Electromagnetic Interference Problems Between Power Lines and Metal Pipelines. 30 March 2012. Dan D. Micu¹, Georgios C. Christoforidis² and Levente Czumbil¹ ¹Technical University of Cluj-Napoca, ²Technological Educational Institution of West Macedonia, Kozani, ¹Romania ²Greece. Link <https://www.intechopen.com/books/recurrent-neural-networks-and-soft-computing/artificial-intelligence-techniques-applied-in-electromagnetic-interference-problems-between-hv-power>