



Oceania Radiofrequency  
Scientific Advisory Association

## OCEANIA RADIOFREQUENCY SCIENTIFIC ADVISORY ASSOCIATION INC.



### Concerning IFC: 22/2017: Spectrum for broadband in mmWave bands

Consultation closes: 20 October 2017

Our association (flyer attached gives further background) submits the following in relation to the consultation questions:

#### **Q 1: What disposition should the ACMA adopt in progressing possible 5G mmWave bands? etc.**

We consider that it would be extremely unwise to progress this technology at the current time, as the technology has not been adequately assessed from a public health perspective. There is a body of strong scientific and medical expertise warning about serious adverse health effects of 5G. The potential hazards of such technology for human health and the environment need to be fully investigated by scientists independent from industry. For example, on September 13, 2017, more than 180 scientists and doctors sent **the attached appeal** for a moratorium on the roll-out of 5G in the European Union. 5G would substantially increase exposure to radiofrequency electromagnetic fields (RF-EMF) on top of the 2G, 3G, 4G, Wi-Fi, etc. for telecommunications already in place. Higher frequency fields of the kind proposed for 5G pose even greater concerns than those to which we are currently exposed. We should be moving instead to safer, wired technologies based on what is currently scientifically known – not more wireless. There is an urgent need to evaluate 5G health effects before millions are exposed. Do we know, for example, whether 5G wave bands would increase skin diseases such as melanoma or other skin cancers?

Consider another example where a technology was applied in complete ignorance of the potentially very dangerous consequences. When chlorofluorocarbons (CFCs) were discovered in 1928 and later put into industrial use as refrigerants, no one considered what their wider impacts might be. It turned out that ignorance of the effects CFCs have on stratospheric ozone became a major life-threatening gap in human understanding, when it was discovered in the 1980s there was a huge hole in the ozone layer over the South Pole. Did anyone think to ask “What does this substance do to what?” The Antarctic ozone hole, as it came to be known, made depletion of the ozone layer a real and present danger to lawmakers and the public at large. Predictions of significant increases in the incidence of skin cancer resulting from continued use of CFCs spurred international action. In 1987, 56 countries agreed under what became known as the Montreal Protocol to cut CFC production and use in half. In subsequent years, the protocol was strengthened to require an eventual worldwide phase-out of the production of CFCs and other ozone depleting chemicals.



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A further example concerns the addictive use of smartphones. Did anyone consider that prior to their widespread introduction, their subsequent use while driving cars would create distraction issues resulting in road crashes and inevitable deaths and serious injuries?

There is now an extensive literature including thousands of studies on the many adverse non-thermal health and biological effects of microwave/radiofrequency and lower frequency electromagnetic fields. These have been clearly outlined by reputable medical organisations. For example, **The European Academy for Environmental Medicine (EUROPAEM)** in its [2016 guidelines](#) for treatment of EMR-related illnesses states: *“Studies, empirical observations, and patient reports clearly indicate interactions between EMF exposure and health problems. Individual susceptibility and environmental factors are frequently neglected. New wireless technologies and applications have been introduced without any certainty about their health effects, raising new challenges for medicine and society.”* It further states: *“On the one hand, there is strong evidence that long-term exposure to certain EMFs is a risk factor for diseases such as certain cancers, Alzheimer’s disease, and male infertility. On the other hand, the emerging electromagnetic hypersensitivity (EHS) is more and more recognized by health authorities, disability administrators and case workers, politicians, as well”.*

**The American Academies of Environmental Health (AAEH)** has urged for [precautionary](#) actions and it recognises “a range of non-thermal based negative health effects” related to wireless radiation: *“The fact that RF exposure causes neurological damage has been documented repeatedly. Increased blood-brain barrier permeability and oxidative damage, which are associated with brain cancer and neurodegenerative diseases, have been found”.* *“Genotoxic effects from RF exposure, including studies of non-thermal levels of exposure, consistently and specifically show chromosomal instability, altered gene expression, gene mutations, DNA fragmentation and DNA structural breaks”*

Further, Professor of Medicine at the University of California, San Diego, Beatrice Golomb has recently summarised this information in the **attached statement** on Senate Bill 649 in California, a bill linked to the extension of 5G in California. She states that EMR has been shown, including with non-ionizing frequencies, and at levels below those that cause thermal effects, to cause physiological effects, injury and cell death, not only in humans but also animals and plants. Many studies demonstrate that EMR impairs antioxidant defences, increases oxidative stress, and damages cell mitochondria. These mechanisms are consistent with mechanisms playing a role in symptoms reported in those who are electrosensitive – extending to seizures, heart failure and cognitive decline.



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International Commission on Non-Ionizing Radiation Protection (ICNIRP) and almost all other safety guidelines/standards for microwave/lower frequency EMFs are based solely on thermal (heating) effects, not on non-thermal effects. **The Environmental Protection Agency, USA** has declared that current exposure standards can only assure safety from short term heating effects: *“The FCC’s current exposure guidelines, as well as those of the Institute of Electrical and Electronics Engineers (IEEE) and the International Commission on Non-ionizing Radiation Protection, are thermally based, and do not apply to chronic, nonthermal exposure situations. They are believed to protect against injury that may be caused by acute exposures that result in tissue heating or electric shock and burn”*. The US EPA further stated: *“Therefore, the generalization by many that the guidelines protect human beings from harm by any or all mechanisms is not justified”*.

In recent years, various groups of international scientists have expressed concern about non-thermal effects and the inadequacy of safety guidelines and standards. This is the case too with the September 2017 EU 5G appeal.<sup>1</sup> The reason current ICNIRP safety guidelines are obsolete, is that ICNIRP members are linked to the telecommunications industry and thus have conflicts of interest that don’t favour public health priorities, but rather commercial ones.<sup>2</sup>

Similarly, Professor Golomb refers to analyses showing that most studies funded by industry failed to show physiological effects, whereas most studies without such industry bias affirmed effects. That is, conflict of interest is a prime determining factor of the results of the studies. Similar outcomes have been demonstrated in other industries e.g. the pharmaceutical industry with a vested interest in the drugs it markets.

Fortunately, from our Association’s point of view, Senate Bill 649 has recently been vetoed in California. This reflects a large degree of community and local opposition, including legal action. Joel Moskowitz, Director of the Centre for Family and Community Health at UC Berkeley’s School of Public Health stated that “The Governor’s veto of SB 649 protects Californians from exposure to millimetre radiation from as many as 50,000 new cell towers.”

[\(http://www.mercurynews.com/2017/10/16/california-gov-jerry-brown-vetoes-bill-easing-permits-on-cell-phone-towers/\)](http://www.mercurynews.com/2017/10/16/california-gov-jerry-brown-vetoes-bill-easing-permits-on-cell-phone-towers/)

### Concerning Qs 2, 3, 6, 7, 8, 9, and 10

Given the above response to Q 1, no further action should be taken to on 5G mmWave bands until suitable and broad based assessment of such technology and its ramifications has been explored. A multidisciplinary team including medical doctors, oncologists, and biologists expert in EMF issues is the very minimum required, rather than those with insufficient biological understanding,



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or committed to an outdated paradigm. No geographical areas should currently be made available for broadband in the 26 GHz band. Much of the past science has analysed older technology like 2G and 4G, and 5G with its different wavelengths and energy levels is to a great extent unexplored. What evidence there is on 5G is concerning. Higher frequencies and higher pulsation rates make the situation considerably more problematic.

A recently published study on skin by Israeli scientists found that higher frequencies intended for use in 5G are preferentially absorbed in the sweat duct, a significant biological effect.<sup>3</sup> They ask: "Has industry properly considered possible health consequences as a result of the introduction of the 5G standard?" Further they state: *"In light of our work and a growing number of publications showing the frequency of 5G can have serious biological effects, we believe that current efforts to accelerate the implementation of 5G should be delayed until additional studies are made to assess the critical impact on human health."* (Environmental Health Trust website ehtrust.org "Scientific Update on 5G Small Cells and Human Health"). Please note that the skin is the largest organ of the human body and is the first line of defence being the major part of the innate immune system. Therefore, any environmental agent that caused interference of skin cell biological functions may cause serious adverse health effects.

Other health effect studies on millimetre waves include those relating to arrhythmias, heart rate variability, teratogenic effects, bacterial effects and antibiotic resistance, cataracts, immune system, chromatin effects, and gene expression.<sup>4</sup>

Given the state of knowledge on public health issues in relation to 5G RF frequencies it would be naïve and reckless to further pursue a 5G roll-out. There is an emerging public health issue related to the RF EMF levels existing now, requiring monitoring and evaluation. A large number of scientists around the world including us at ORSAA consider that the unrestricted roll-out of more wireless technology would simply expand the circle of injury and suffering with serious consequences on humans as well as other species. We urge ACMA to refrain from further increasing the exposure of the Australian population to RF EMR by introducing more high power mm waves associated with 5G.

Yours sincerely

Victor Leach  
Secretary



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## References

- 1 Pall, M. L. How to approach the challenge of minimizing non-thermal effects of microwave radiation from electrical devices. *international Journal of Innovative Research in Engineering & Management* **2**, 71-76 (2015).
- 2 Hardell, L. World Health Organization, radiofrequency radiation and health - a hard nut to crack (Review). *International Journal of Oncology* **51**, 405-413 (2017).
- 3 Betzalel, N., Feldman, Y. & Ben Ishai, P. The modeling of the absorbance of sub-THz radiation by human skin. *IEEE Transactions on Terahertz Science and Technology* **7**, 521-528 (2017).
- 4 Russell, C. A 5G wireless future: Will it give us a smart nation or contribute to an unhealthy one? *The Bulletin (Santa Clara County Medical Association)*, January/February, 20-23 (2017).

## Attachments

- 1 5G Appeal EU: Scientists and doctors warn of potential serious health effects of 5G September 13, 2017
- 2 Beatrice Alexandra Golomb, MD, PhD Professor of Medicine UC San Diego School of Medicine: Statement on California SB 649, August 22, 2017
- 3 ORSAA Flyer