

# EMR and Health

Report on electromagnetic radiation, health and well-being

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## New radiation guidelines

### ICNIRP updates international radiation guidelines for 5G.

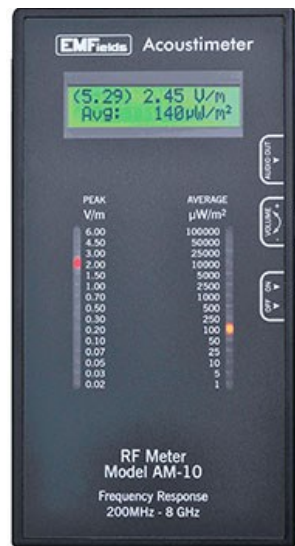
On 11 March the International Commission on Non Ionizing Radiation Protection (ICNIRP) announced that it had released new guidelines on radiofrequency radiation (RF) exposure levels. These will replace the current guidelines that have been in place since 1998.

This is a significant step because the ICNIRP Guidelines are promoted by the World Health Organisation and form the basis for radiation standards in many countries, including Australia.

The updated Guidelines cover the frequencies that will be used for new 5G technologies, as well as those currently used for wireless and radio transmissions in the range 100 kHz to 300 GHz.

According to ICNIRP Chairman, Dr Eric van Rongen, 'The guidelines have been developed after a thorough review of all relevant scientific literature, scientific workshops and an extensive public consultation process.'

That may be the case, but they have been developed without taking into account the recommendation of much of



that feedback and the recommendations of scientists and medical practitioners over the last two decades. The result is that the current Guidelines perpetuate many of the flaws of its predecessor.

A key problem with the new Guidelines is that they perpetuate the discredited view that it's only necessary to protect against the thermal (heating) effects of exposure. This is contrary to the findings of a large body of research that harmful effects occur at much lower levels.

Secondly, ICNIRP has assumed that exposure measurements can be averaged over a period of time. This is not necessarily the case. The impact of short, intense exposures needs to be considered. So, too, do the characteristics of the signal—

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polarisation, pulsing and modulation, for example—that affect how the body responds to exposure. By taking into account only the mean values of an exposure, the Guidelines underestimate its risk.

Thirdly, there's compelling evidence linking RF radiation with cancer. In 2011 the International Agency for Research on Cancer (IARC) classified RF radiation as a class 2B carcinogen and subsequent research has produced further evidence of carcinogenicity, such that some scientists claim it should be considered a class 1 carcinogen. Already courts have ruled that mobile phone exposure caused brain tumours and some insurers are refusing to cover claims related to electromagnetic fields.

The release of the Guidelines has been met with mixed reactions.

For the telecommunications industry, it's business as usual. 'The AMTA welcomes the release of the latest international guidelines for the protection of humans exposed to radiofrequency electromagnetic fields,' says the Australian Mobile Telecommunications Association, the peak body for the telecommunications industry.<sup>2</sup>

Other scientists are not so sure.

'It's 'Time To Clean House', says Louis Slesin, Editor of *Microwave News*. 'The first step is for ICNIRP, Mike Repacholi's bastard child, to be disbanded.'<sup>3</sup>

'The ICNIRP Guidelines may be contradictory to a vast number of existing scientific reports demonstrating the harmful effects of RF radiation', says oncologist and RF researcher, Professor Lennart Hardell. 'The EU has given mandate to a 13-member, non-governmental private group, the ICNIRP, to decide upon the RF radiation guidelines. The ICNIRP, as well as SCENIHR, are well shown not to use the sound evaluation of science on the detrimental effects of RF radiation, which is documented in the research. These two small organizations are producing reports which seem to deny the existence of scientific published reports on the related risks.'<sup>4</sup>

1. 'ICNIRP GUIDELINES FOR LIMITING EXPOSURE TO ELECTROMAGNETIC FIELDS (100 KHZ TO 300 GHZ)', published in *Health Phys* 118(5): 483–524; 2020; available online at <https://www.icnirp.org/cms/upload/publications/ICNIRPfgdl2020.pdf>
2. <https://amta.org.au/new-safety-guidelines-released-by-icnirp/>
3. <https://microwavenews.com/news-center/time-clean-house>
4. Lennart Hardell and Rainer Nyberg, 'Appeals that matter or not on a moratorium on the deployment of the fifth generation, 5G, for microwave radiation,' *Mol Clin Oncol* 12:247-57, 2020

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## Australia's 5G Inquiry—the report

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There was never a chance of an unbiased report.

Take a government that makes millions of dollars from spectrum sale and that has already allowed carriers to commence the rollout of their 5G networks, add a belated inquiry and the result is as we predicted: a report that ignores the feedback of the majority of submitters and favours the telecommunications industry.

Democracy in action!

In March, the Federal Government published the report 'The Next Gen Future Inquiry into the deployment, adoption and application of 5G in Australia' by the House of Representatives' Standing Committee on Communications and the Arts.<sup>1</sup>

The report recommends a range of actions to facilitate and speed up the rollout of 5G:

- 'that spectrum allocation be finalised' - in other words, that more spectrum be available for 5G

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- discussions between telecommunications businesses ‘for managing redundant and/or ageing telecommunications equipment’
- reviewing ‘the low impact facilities framework to ensure that its powers .... are fit-for purpose in a 5G environment’
- ensuring ‘that rural and regional consumers benefit from 5G services in a timely manner’
- encouraging ‘the manufacture of 5G infrastructure within Australia’
- a government campaign to ‘respond to concerns raised about the new networks’
- increasing apprenticeships ‘to assist with the rollout of 5G in Australia’
- ‘boosting industry awareness about the advantages of 5G to businesses’.

It also recommends that the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) ‘implement a suitable mechanism to consult with members of the community regarding the safe levels of electromagnetic radiation’. ARPANSA is known to endorse the radiation limits of ICNIRP which many scientists and doctors believe are inadequate for protecting health (see page 1).

The Inquiry received more than 500 submissions on the rollout of 5G, most of them from the public. ‘Nearly all of these oppose the premature rollout of 5G on health and environmental grounds. The consensus is striking,’ said Murray May who tracked submissions to the inquiry.

Nevertheless, there are no recommendations for testing the technology for safety before rolling it out, for conducting population studies on the health of communities impacted by the technology or for addressing the multitude of social, educational and behavioural problems that have been linked to the use of radiating technologies and that are likely to be amplified by the use of 5G.

If that’s not sufficient indication of the committee’s bias, then what about this?

The Inquiry held six hearings in different states at which some submitters were invited to give oral statements. Despite the fact that the majority of the submissions to the enquiry opposed the rollout of 5G, the majority of the witnesses invited to speak at the hearings were 5G supporters.

In fact, 22 of the 30 speakers at these hearings supported 5G and they spoke for a total of 1020 of the 1170 minutes available.

So much for impartiality!

If the government is not listening to community concerns about 5G and is fast-tracking the rollout of 5G networks before they’ve been shown to be safe, then where does that leave those concerned about the potential health risks?

It leaves them entirely responsible for making their own homes and their families safe.

You can download our free White Paper on 5G and what you can do about it from our new website at [emraustralia.com.au](http://emraustralia.com.au).

1. [https://www.apn.gov.au/Parliamentary\\_Business/Committees/House/Communications/5G/Report](https://www.apn.gov.au/Parliamentary_Business/Committees/House/Communications/5G/Report)

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*‘Despite the fact that the majority of the submissions to the enquiry opposed the rollout of 5G, the majority of the witnesses invited to speak at the hearings were 5G supporters.’*

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## Australian study

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A new study by Australian researchers has investigated the effects of mobile phone radiation on cells. The study is by Dr Malka Halgamuge and Efstratios Skafidas from Melbourne University and Prof Devra Davis from the US Environmental Health Trust who conducted a meta-analysis of 300 studies conducted between 1990 and 2015 that involved 1127 experiments.

The authors analysed studies that covered the frequency range 895 to 2450 MHz, used SARs up to 50 watts per kilo and involved exposures lasting from minutes to 6 days.

The authors found that approximately half the studies showed that cells reacted to mobile phone signals and approximately half showed no reaction. This may be due to the type of cells and the properties of the signal, they said.

Cells that were most affected were faster-growing and less differentiated cells, such as spermatozoa and human epithelial cells. Less effects were observed in more mature cells.

'This study confirms observations from the REFLEX project, Belyaev and others that cellular response varies with signal properties,' the authors wrote.

The study is thought to be the first to take into consideration the cumulative energy absorption which they calculated as SAR x exposure time.

Halgamuge, MN et al, 'A Meta-Analysis of in Vitro Exposures to Weak Radiofrequency Radiation Exposure from Mobile Phones (1190-2015)', *Environ Res* 184, 109227, 2020.

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## Council bans 5G

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Keene City Council in the United States is to implement a temporary ban on 5G antennas.

Councillors voted 10 to 2 not to approve applications for 5G infrastructure from telecommunications carriers until January 2021.

Council does not expect to receive many applications for 5G in that time period, but if it does, it could face court action from carriers, as the Federal Telecommunications Act prohibits councils from banning the installation of 5G.

[https://www.sentinelsource.com/news/local/city-council-approves-temporary-g-ban-in-keene/article\\_1341857d-4c7c-5fb4-ab27-70d8e5b9d131.html](https://www.sentinelsource.com/news/local/city-council-approves-temporary-g-ban-in-keene/article_1341857d-4c7c-5fb4-ab27-70d8e5b9d131.html)

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## Digital media & autism-like behaviours

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Does children's use of screen technology contribute to the symptoms associated with autism spectrum disorders (ASDs)?

To answer this question, US researchers conducted a study of 2152 children aged up to two years and their parents.

They found that one-year-olds who watched most TV or videos had higher rates of ASD-like symptoms age two, but not with ASD itself. They also found that children whose parents played with them more had less ASD-like symptoms at age two.

So using digital devices as a baby-sitter may not be a good idea, after all.

Karen Frankel Heffler, MD et al, 'Association of Early-Life social and Digital Media Experiences With Development of Autism Spectrum Disorder-Like Symptoms', *JAMA Pediatr*, published online Apr 20, 2020, 2020. doi:10.1001/jamapediatrics.2020.0230; <https://jamanetwork.com/journals/jamapediatrics/article-abstract/2764573>

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## The smart-phone brain

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Smart phone addiction causes structural and functional changes in the brain, according to a new study from Germany.

Scientists performed brain scans (functional MRIs) on 48 volunteers, some with smart phone addiction and others without.

They found that those with addiction had less volume of grey matter in several regions of the brain (left anterior insula, inferior temporal and parahippocampal cortex). They also found 'lower intrinsic activity' in part of the angulate cortex.

The study is the first to find clear evidence of changes in brain activity and structure among people with smart phone addiction. According to the authors, their research 'questions the harmlessness of smartphones,' especially for users with a tendency to phone-related addiction.

Horvath, J et al, 'Structural and functional correlates of smartphone addiction', *Addict Behav* 105:106334, June 20.

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## EHS is real

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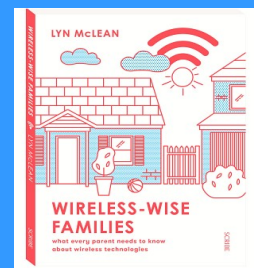
Electromagnetic hypersensitivity (EHS) is a real and diagnosable condition that should be classified as such in the International Classification of Diseases, say Dr Dominique Belpomme and Philippe Irigaray, in a new paper published in *Molecular Sciences* earlier this year.

From their study of over 2000 patients with EHS and/or multiple chemical sensitivity, the authors observed that there were characteristic biological markers for the conditions which 'strongly suggest that EHS is a neurologic pathological disorder which can be diagnosed, treated, and prevented.'

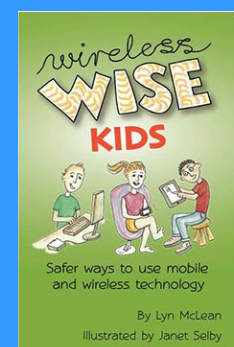
Belpomme, D and Irigaray, P, 'Electrohypersensitivity as a Newly Identified and Characterized Neurologic Pathological Disorder: How to Diagnose, Treat, and Prevent It', *Molecular Sciences*, 5 Feb, 2020.



### Books by Lyn McLean



### Wireless-wise Families



### 'Wireless-wise Kids'

### Wireless-wise Kids

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## Radiation-safe buildings

If we want healthy buildings, we need to consider the impact of radiofrequency (RF) radiation, say the authors of a new paper from the journal *Building and the Environment*.

'It is timely to heed calls to include low RFR levels as a performance indicator for the health, safety and well-being of occupants and the environment', they say and provide compelling reasons for reducing exposure.

The first of these is the health effects that have been documented in the scientific literature. 'Effects observed in studies of humans exposed to non-thermal levels of RFR include: cancer; early childhood developmental problems; brain, sperm and DNA damage; as well as electromagnetic hypersensitivity.'

RF radiation has also been shown to have harmful effects on the environment. 'Research has demonstrated adverse effects of radiofrequency radiation (RFR) on environments and wildlife, including birds, amphibians, insects, fish, mammals and plants.'

The authors point out that there are legal and insurance risks associated with exposure. Some industry liability insurance providers do not provide coverage against adverse health effects from RFR. Lawsuits for RFR health-related conditions are underway, and some have been successful in different countries.'

Reducing exposure to RF radiation is in line with recommendations by various international authorities, including governments, medical associations and gatherings of scientists.

There are practical reasons, too, for reducing RF radiation in buildings. 'It can degrade operation of wireless systems (eg Wi-Fi), and sensitive electronic equipment (wired or wireless) such as for entertainment recording or medical applications.'

According to the authors, there are many advantages of using wired rather than wireless connections in a building. They say, 'Wireless networks:

- continue to be about 100 times slower than wired systems;
- are unreliable, and more prone to both latency and delay issues'
- consume significant amounts of energy—more than wired—and are not sustainable;
- increase the points of vulnerability; and
- increase the security and privacy risks to personal and business data.'

'Ensuring that the health and safety of occupants are not compromised requires those in the building science professions to develop and apply needs and means assessments, as well as best practices for methods and models for communications, with RFR wireless technology as a less-preferred option', the authors wrote.

Frank M Clegg et al, 'Building science and radiofrequency radiation: What makes smart and healthy buildings,' *Building and Environment* 176 (2020)106324.

*'Effects observed in studies of humans exposed to non-thermal levels of RFR include: cancer; early childhood developmental problems; brain, sperm and DNA damage; as well as electromagnetic hypersensitivity'*



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## Russian recommendations

*Prominent Russian scientists have released guidelines for limiting children's exposure to radiofrequency radiation from wireless equipment under lockdown conditions.*

### Digital environment security distance learning for children under 18

Recommendations for organizing distance learning at home conditions with temporary restrictions on school attendance are designed to children and their parents, for grandparents and all who help children study at home using digital technology during the forced restrictions on learning at school and other educational institutions.

1. For work of children under 18 years old at home in the distance learning mode it is recommended to primarily use personal computers and laptops connected to the Internet via a wired network. Using wireless network distance from the WiFi point to the workplace should be not less than 5 meters.
2. The keyboard of the computer (laptop) must be disinfected antiseptic daily before starting work. Monitor also needed treat with an antiseptic agent from the workplace.
3. Before using the keyboard, you need to wash your hands as a child, so and an adult who helps him.
4. To reduce the risk of visual impairment and musculoskeletal disorders systems must be provided working at the computer (laptop) child comfortable workplace (the height of the table and chair should correspond to the growth indicators of the child), exclude screen illumination monitor.
5. The main light source at the child's workplace should be located side of the screen (not behind the screen and not from the back side of the screen). The brightness of the source should approximately correspond to the brightness screen.
6. Using tablets for distance learning at home conditions permissible by adolescents over 15 years of age. Before use tablet, wash your hands and wipe the screen with a disinfectant means (wet towel). The location of the WiFi point should be on a distance of at least 5 m from the student's workplace. The tablet is placed on table on a stand at an angle of 30 °, the distance from the screen to the pupil's eyes is not less than 50cm. It is necessary to exclude work with a laptop or tablet on knees, in hands, lying and the like.
7. For all age groups up to 18 years, it is necessary to completely exclude the use of smartphones for educational purposes (reading, searching information)
8. For all age categories for reading, completing tasks It is recommended to use mainly ordinary books, notebooks.



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*'For all age groups up to 18 years, it is necessary to completely exclude the use of smartphones for educational purposes'*

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9. Children under 6 years old must completely exclude the use of any computer equipment for educational purposes at home.

10. Children aged 6 to 12 are advised to minimize the use of computer equipment for educational purposes at home conditions. If necessary, use its total the duration of all types of on-screen activities for children of this age group should not exceed 2 hours per day (including viewing TV). The routine should be based on a one-to-three schedule for ages 6 to 8 years (for every 10 minutes of work 30 minutes of rest) and "One to two" for ages over 8 and up to 12 years (for every 10 minutes work - 20 minutes of rest).

11. For children aged 12 to 18, the following regimen is recommended use of computer technology: "one to two" for ages older 12 years and up to 15 years (for every 30 minutes of work - 60 minutes of rest) and "one to one" for children over 15 years old and under 18 years old (for every 45 minutes of work—45 minutes of rest). The total duration of all types of screen activities for children of this age group, including viewing TV should not exceed 3.5-4 hours per day.

12. For the prevention of visual fatigue is necessary during the break perform gymnastics for the eyes, for the prevention of general fatigue—warm-up (bends, turns of the body, squats, etc.)

13. If necessary, use headphones to limit them continuous use: no more than an hour at a volume of not more than 60%.

14. It is necessary to ventilate the room where classes are held before starting classes (at least 15 minutes) and after each hour of work.

15. Do not use tablets and smartphones for educational purposes outside premises (in the park, on the playground and similar places).

Recommendations are based on data from a multicenter program, research to ensure children's safe digital educational technologies, materials Research Institute of Hygiene and Health, "NRC Children's Health" and the Russian National Committee for Protection against non-ionizing radiation, as well as using recommendations from the World Health Organization and world best practices for hygiene of the digital educational environment for children.

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<https://niigd.ru/news/bezopasnost-cifrovoj-sredy-v-usloviyax-distancionnogo-obucheniya-detej-do-18-let.html> (in Russian)

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## Lockdown and technology

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Who would have guessed that last issue, while we were lamenting the bushfire damage to the lungs of the earth, this issue we'd be lamenting the damage to the lungs of humanity?

In the intervening months, many of our readers will have been in lockdown—working from home, studying from home, shopping from home, socialising remotely from home. It's changed our lives and at the core of this change has been our technology.



Never have we been more dependent on our phones and internet.

For perhaps the first time ever, many people have been spending long periods of time using their wireless devices in close proximity to their wireless routers. And they've been feeling the effects. People who've contacted us have reported symptoms such as:

- brain fog
- fatigue
- migraine
- burning hands (when holding devices)
- nausea
- pins and needles
- tinnitus
- insomnia and other symptoms too numerous to list.

Sound familiar? Symptoms like these are often associated with exposure to electromagnetic radiation and of the condition known as electromagnetic hypersensitivity.

Needless to say, lots of them are turning to us to help them reduce their exposure and choosing radiation-free equipment for internet and landline phones.

One positive outcome from lockdown.

And there are others. Lockdown has meant fewer people travelling to work, less traffic accidents, less factory pollution, less car pollution and cleaner air and water. Socially there's less crime, more interaction with neighbours and more interest in health. Nature has had a break from its relentless battering. Birds are returning to the suburbs and marine mammals nesting on beaches undisturbed. People are spending time walking and gardening their plot of nature.

It will be interesting to see what positive changes, if any, survive the post-lockdown transition.

'Perhaps,' says environmental scientist Dr Magda Havas, 'as we reignite the economy, we can think about ways we can co-inhabit this planet with all the other creatures by doing less harm and living in a more sustainable way based on the lessons we learned from nature.'<sup>1</sup>

Let's hope so.

1. <https://magdahavas.com/health-issues/is-there-any-good-news-coming-out-of-the-covid-19-pandemic-what-are-the-benefits-of-the-lockdown/>