

EMR and Health

Quarterly report on electromagnetic radiation, health and well-being

Vol 15 No 5 Oct 2019

5G inquiry



The Australian Government has launched an inquiry into 5G technology & is inviting public submissions.

The Federal Government is inviting public comment on the roll-out of fifth generation wireless technology. On 19 September, it announced that the House of Representatives Standing Committee on Communications and the Arts is conducting a 'Parliament-first inquiry' into fifth-generation (5G) mobile network technology to examine the deployment, adoption and application of 5G in Australia.

In the announcement, Committee Chair, Dr David Gillespie MP, said 'We want to hear about the opportunities and challenges of 5G'.

Yet, it was only the advantages of 5G technology that Dr Gillespie mentioned in a somewhat biased announcement, which referred to increased speed and network capacity afforded by 5G.

It made no mention of health concerns, privacy invasion, lack of community involvement in decision making or the detrimental impacts of wireless technology on interpersonal relationships, learning and mood.

The Inquiry's terms of reference are to:

1. investigate the capability, capacity and deployment of 5G;
2. understand the application of 5G, including use cases for enterprise and government.

Submissions may be in the form of a letter, a short document, a more substantial paper, or an audio visual format. They may include appendices and other supporting documents.

Comments on the deployment and application of 5G can be found in our article overleaf.

They must be lodged by Friday, 1 November 2019.

Submissions can be lodged online (see https://www.aph.gov.au/Parliamentary_Business/Committees/OnlineSubmission) or sent to the Committee Secretariat:

PO Box 6021
Parliament House
CANBERRA
Canberra ACT 2600

Phone: +61 2 6277 4386
communications.reps@aph.gov.au

You can see more information at: https://www.aph.gov.au/Parliamentary_Business/Committees/House/Communications/5G?fbclid=IwAR0sDP8PHMFqZAcbixqdMz5E3OVTnkr3afb99j4S6KSPWPg_tPI1VXbg9Nc

Details about how to make a submission are available at: https://www.aph.gov.au/Parliamentary_Business/Committees/House/Making_a_submission

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Deployment and application of 5G

The Federal Government inquiry into 5G is an opportunity for Australians to raise their many concerns about this technology.

Deployment of 5G networks is undemocratic

- Radiation-emitting antennas are being installed outside and close to people's homes without their approval and despite their objections. We know that carriers often, if not routinely, ignore letters of objection they receive from residents they've notified under the Mobile Phone Base Station Deployment Code.
- Last year the Federal Government amended the Telecommunications (Low-impact Facilities) Determination 2018 to encompass small cell antennas so that communities, councils and state authorities would be denied the opportunity to have a say about where these antennas are located.
- By favouring of the rights of the telecommunications industry over those of the community, the Federal Government demonstrates a disregard for the principles of democracy.
- Australians have a right to have a say about the installation of radiation-emitting infrastructure outside their homes that is intended to penetrate their homes and impact on every individual within, no matter how young, old, sensitive or unwell.

Deployment of 5G networks is premature

- The 5G network is being deployed well in advance of scientific evidence that it is safe. There is no research to show that exposure to the specific features of the 5G signal will be safe for humans, animals, insects and the wider environment in the long-term.
- Trials of 5G technology have not incorporated surveys of affected populations to gauge their response to exposure.
- Compliance with the ARPANSA RPS3 Standard does not guarantee safety, as some of the assumptions underpinning this standard have been scientifically discredited (for example, that only thermal exposures cause health problems). Hundreds of scientists and doctors have called for a revision of the international standard on which it is based (the EMF Scientist Appeal).¹
- Overseas authorities, such as Geneva and Vaud, have called for moratoriums on the rollout of 5G networks pending the release of relevant research.
- Not only is there no evidence that 5G is safe, but there is evidence that it is not.
 - 5G equipment emits radiofrequency radiation that is a Class 2B carcinogen.
 - Thousands of peer-reviewed scientific studies show adverse effects on the body, consistent with ill-health, from exposures that comply with international standards.
 - Some people report symptoms that correlate to exposure, including headaches, sleep problems, memory/concentration problems, nausea and dizziness.
 - The frequencies above 20 GHz intended for 5G are used for military technologies, including crowd control.

Deployment of 5G is unnecessary

- How many communications networks do Australians need?
- The NBN is still being rolled out in order 'to connect Australia and bridge the digital divide, nbn's key objective is to ensure all Australians have access to fast broadband'.² Currently 3G and 4G networks are available as well as the 5G network that is being rolled out and 6G is on its way. Each of these networks involves the construction of a matrix of radiating antennas, with more antennas needed for higher frequencies.
- Experience tells us that Australians do not want antennas located outside their homes, school and childcare centres and

(Continued on page 7)

EMR and behaviour

Electromagnetic radiation produces changes in the brain that may affect behaviour. These are the conclusions of a review published recently in the journal of Environmental Science and Pollution Research.

The authors reviewed papers published primarily in the last ten years that had investigated the link between EMR and behaviour on animals. While not all papers showed an effect, many observed effects on:

Memory and learning

- impaired memory, including spatial memory
- hyperactive behaviours
- increased levels of 5-Ht which could lead to memory problems
- changes in the hippocampus of the brain, involved in memory formation, learning and emotions.
- changes in emotional learning.

Anxiety

- increased anxiety-like behaviours
- reduced GABA and aspartic acid in the cortex and hippocampus which could cause anxiety.

Some effects on locomotion have also been observed.

How can EMR cause these problems? According to the authors, there are three mechanism that can explain these effects:

EMR alters brain structure

According to the authors, studies show that exposure to EMR caused structural changes in different regions of the brain.

- It increased the permeability of the blood-brain-barrier in the medulla, cerebellum, hypothalamus, hippocampus and cortex which, the authors said, is 'detrimental to the brain'.
- In the hippocampus, it's been shown to cause degenerative changes, including loss of neurons, loss of granule cells and changes to pyramidal cells. One study showed 'congestion, haemorrhage, enlarged perivascular spaces, and deformed nuclei'. Some research showed that exposing a pregnant animal to EMR caused degenerative effects on the hippocampus of the offspring.
- In the cerebral cortex, exposure caused degenerative changes, including neuroinflammation and contracted cytoplasm. It caused degenerative changes to Purkinje cells and reduced the numbers of these cells.
- In the amygdala, there is some evidence that exposure caused oxidative stress and cell death.
- According to the authors, these structural changes of the brain could be caused by:
 - ⇒ Oxidative stress (caused by free radical damage), which interferes with learning and memory, contributes to anxiety and neurodegenerative disease, can cause cell death and may promote tumours. 'Exposure to RF-EMR induces an imbalance in the oxidant/antioxidant defense system in the brain indicating that the internal environment of each brain cell was getting disturbed by the insult,' the authors said.

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Magnetic fields and cancer

Magnetic fields from electrical sources, such as powerlines, wiring and appliances, have been linked to both cancer and leukemia for decades. Some have argued that the evidence for this link is 'weak' or 'inconsistent', however, that's not the case, says Dr David Carpenter, writing in the November issue of the journal *Environmental Research*.

In his paper, Carpenter reviewed both the results of studies on this topic and their funding sources. He found that the studies that had been supported by government or independent funding nearly always found a link between magnetic fields and childhood leukemia, whereas studies supported by industry funding did not.

Carpenter says there is 'strong evidence' that exposure to high magnetic fields increased the risk of adult leukemia, brain cancer and breast cancer as well as less strong evidence that it can increase the cancer risk of offspring born to exposed parents.

Based on this evidence, precautions should be implemented to reduce people's exposure, he said.

Carpenter, DO, 'Extremely low frequency electromagnetic fields and cancer: How source of funding affects results', *Environ Res* 178, Nov 2019, 108688.

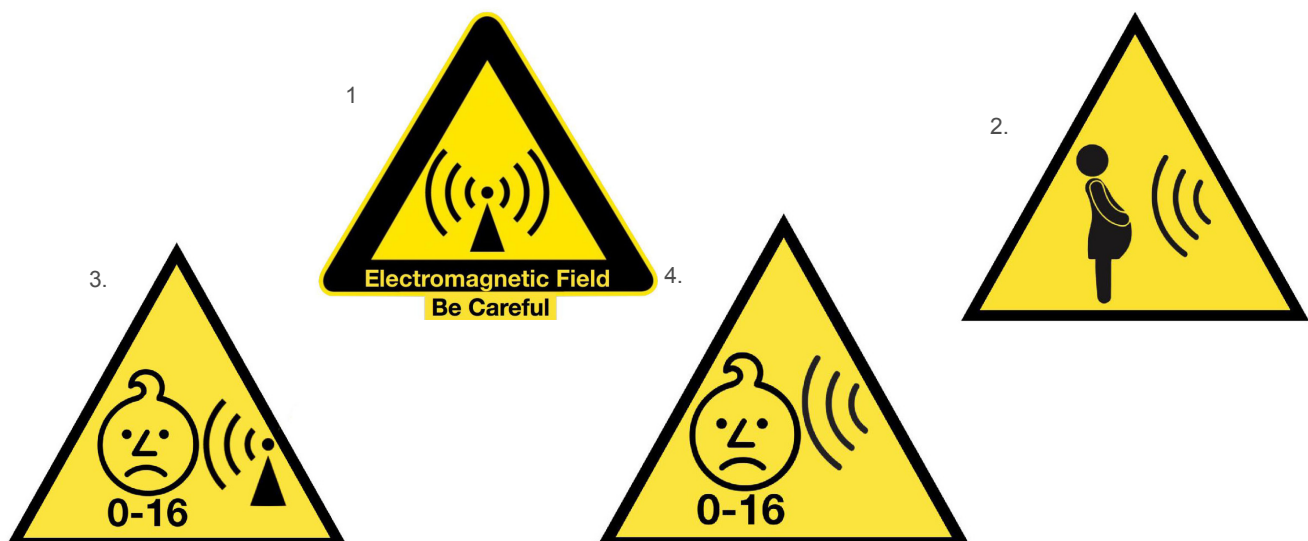
Russia calls for radiation warnings

The Russian National Committee on Non-Ionizing Radiation Protection has recommended that warning signs be introduced for mobile phones and other equipment emitting radiofrequency (wireless) radiation. The purpose of the signs would be to warn the public about the risks of exposure.

Among the suggested signs are the following, which are intended for use:

1. on personal wireless devices
2. on sources in contact with pregnant women
3. on sources in contact with children aged below 16
4. on sources in a room that could potentially expose a child under 16.

More graphics can be seen at: <https://www.radiationresearch.org/campaigns/new-russian-list-of-emf-hazard-and-prohibition-signs-for-wireless-users-and-general-public/>



California bans smart phones in schools

In a nation-first, California has introduced legislation to limit or prohibit pupils' use of mobile phones in schools.

The bill on Pupils: use of smart phones gives school administrators authority over smart phones and any other radiating equipment used in schools or on school-sponsored activities.

'There is growing evidence that unrestricted use of smartphones by pupils at elementary and secondary schools during the schoolday interferes with the educational mission of the schools, lowers pupil performance, particularly among low-achieving pupils, promotes cyberbullying, and contributes to an increase in teenage anxiety, depression, and suicide,' the legislation states.

The new legislation refers to a French ban on students' use of smart phones in primary and middle schools last year.

It also refers to research showing that mobile phone use had adverse effects on students' performance. The London School of Economics and Political Science showed that, when schools banned mobile phone use, their students' test results improved. It concluded that 'schools could significantly reduce the education achievement gap by prohibiting mobile phone use in schools.' In other research, Professor Jean Twenge, from San Diego State University found that heavy use of social media and electronic devices increased levels of unhappiness and were risk factors for suicide.

The legislation can be found at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200AB272

Legal support for EMR problems

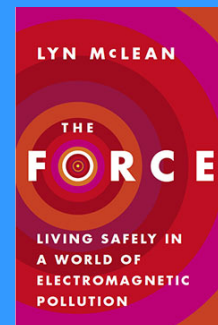


Barrister Raymond Broomhall has been providing legal advice about electromagnetic radiation to individuals, communities and councils for some time. He has been in popular demand in recent months with the roll-out of the new 5G network which will see millions of new antennas installed in residential streets, close to people's homes, schools and workplaces.

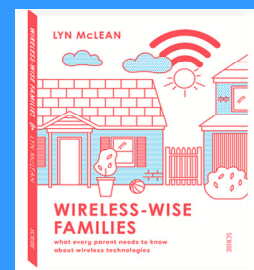
Raymond's new website, EMR legal, contains information about the legal methods he uses and how they can be applied to stop the construction of radiating antennas, including 4G and 5G transmitters.

The website is available at: <https://emrlegaleducation.com/>

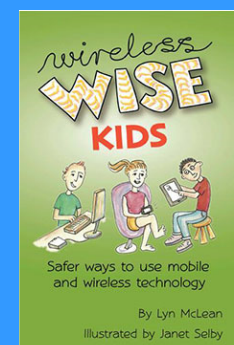
Books by Lyn McLean



The Force



Wireless-wise Families



Wireless-wise Kids

for everything you need to know about keeping your family EMR-safe

Science & Wireless 2019

The Australian Centre for Electromagnetic Bioeffects Research (ACEBR) and Swinburne University of Technology will be holding the 2019 Science and Wireless event in December. The event will focus on 5th generation of mobile communication technology (5G) as well as the new ICNIRP guidelines on limiting electromagnetic fields.

WHEN: Monday 2nd December 2019, 4:00 - 8:00pm

WHERE: Lecture Theatre BA201 (ground floor), Business & Arts Building, Swinburne University of Technology, John St, Hawthorn VIC 3122

This year's event is divided into two parts:

Part1: From 4 pm a technical lecture will focus on the 'New ICNIRP Guidelines for Limiting Exposure to Electromagnetic Fields (100 kHz to 300 GHz)' presented by Rodney Croft (ICNIRP Radiofrequency Guidelines Chair; ACEBR, University of Wollongong), followed by a discussion.

Part 2: From 6 pm the public forum 'Everything You Need to Know About 5G' will cover: What is 5G? / What research has been done on 5G? / Will 5G lead to higher exposures? / Is 5G harmful? / What do we know about mobile phones and cancer? / Can I be allergic or sensitive to mobile phone radiation? / Do national and international safety guidelines cover 5G? / What are the benefits of 5G?

Note that the technical nature of the presentation in 'Part 1' will make it more suitable for professionals working in the area, but anyone is welcome to attend. The 'Part 2' presentations have been tailored to those who do not have background knowledge in this area. In both cases, there will be plenty of time allocated to answer any questions that you may have.

More information on the event will be available soon and posted on the ACEBR website (<https://acebr.uow.edu.au/>). Questions can be addressed to ACEBR at acebr-info@uow.edu.au

5G opinion poll

Australians need convincing on the benefits of 5G technology, says a recent opinion poll conducted by the Roy Morgan research team.

'...there are issues raised by many Australians including potential health concerns, risks to data security, and the reliability of new 5G devices that while offering new capabilities are likely to wear out their batteries at much faster rates than existing 4G enabled devices,' the pollsters concluded.

The research found that more than a quarter of people interviewed were 'concerned about the health risks of 5G technology' and over a fifth said that they would 'worry that changing to 5G will increase the risk to my data security'.

Less than half the interviewees said that they 'would seriously consider buying a 5G phone'.

The results are available online at: <http://www.roymorgan.com/findings/8086-perceptions-of-5g-june-2019-201908120817>

'Less than half the interviewees said that they would seriously consider buying a 5G phone'



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(Continued from page 2)

they are unlikely to react well to this continuing trend.

Deployment of 5G reinforces social and educational problems

- 5G technology will allow Australians to do what they already do more often and more quickly. But this is not necessarily a good thing and is likely to amplify the problems that already exist from the heavy and long-term use of digital devices, such as:
 - addiction
 - reduced educational performance
 - problems in interpersonal communications
 - relationship problems
 - behavioural problems
 - Depression, suicide and anxiety.³

Deployment of 5G is contrary to government interests

- The Australian government risks unpopularity by empowering carriers to install radiation-emitting infrastructure directly outside people's homes and disempowering the community from having any say about it.
- The introduction of 5G technology does not enjoy universal popularity. Research shows that 'Australians need convincing on the benefits of 5G technology', that more than 25% are concerned about the health effects of 5G technology and more than a fifth are concerned about the security risks of 5G technology.⁴
- The Federal government provides Australians with less protection from radiating infrastructure than other administrations with stricter standards and policies, such as Russia, Brussels, Geneva and Vaud.
- It has been suggested that 5G could increase the risk of cyberattacks.⁵
- Law firms have begun to take an interest in this issue, suggesting that litigation is imminent.
 - This means that decision-makers, individual and collective, could be held accountable for any problems that develop from the deployment and use of 5G networks and/or for violating basic Human Rights, including the right to live in a healthy environment.
 - Barrister Raymond Broomhall says that this exposure constitutes 'assault'.⁶

1. EMF Scientist Appeal, <https://www.emfscientist.org/index.php/emf-scientist-appeal>

2. <https://www.nbnco.com.au/corporate-information/about-nbn-co>

3. McLean, Lyn, 'Wireless-wise Families', Melb, Scribe, 2017.

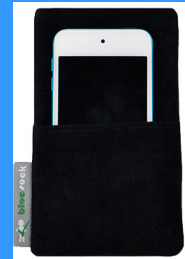
4. <http://www.roymorgan.com/findings/8086-perceptions-of-5g-june-2019-201908120817>

5 Swiss-Re, 'SONAR', New Emerging Risk Insights', <https://www.swissre.com/institute/research/sonar/sonar2019.html>

6. <https://emrleqaeducation.com/>

Mobile phone protection

Blocsock mobile phone



pouches block 96% radiation



Wavewall mobile phone cases protect the head, body and the phone

emraustralia.com.au



(Continued from page 3)

- ⇒ Cell death, also known as apoptosis in different parts of the brain following exposure.
- ⇒ DNA damage. 'Evidence suggests that RF-EMR and continuous waves are capable of inducing single-strand DNA breaks', the authors wrote.
- ⇒ Changes to calcium levels in cells which can cause 'devastating' effects on neurons and can disassemble cytoskeletal proteins. The authors said, 'One of the important signalling substances in the cell is calcium and an imbalance in its homeostasis in the cell can alter many functions of the cell.' Exposure changes

EMR affects glial cells

A second explanation for how EMR causes behavioural changes is through its interaction with glial cells, the authors wrote. These cells play a role in the processing of information and research shows that exposure had negative effects on these cells.

EMR affects neurotransmitters

Thirdly, the authors believe that EMR can affect behaviour by changing neurotransmitters in different areas of the brain. 'There exists a clear relationship between exposure to RF-EMR and amino acid neurotransmitters imbalance in various parts of the brain of young and adult rats'. For example, exposure has been shown to affect levels of norepinephrine (a stress hormone) and dopamine (responsible for feelings of wellbeing).

While this research does not provide conclusive proof that exposure produces harmful effects on human behaviour, it does suggest further research is needed, particularly given that adults use mobile phones for four to five hours a day. 'After witnessing the uncontrollable growth of this technology, everyone believes that it is high time to evaluate the health risks of continuous and chronic RF-EMR exposure effects on humans and for which further studies are warranted,' the authors concluded.

Narayanan, SN et al, 'Radiofrequency electromagnetic radiation-induced behavioural changes and their possible basis', *Environ Sc and Pollution Research*, 2019 Aug 28. doi: 10.1007/s11356-019-06278-5

Non-smart mobiles

Last issue, we reported on a reader's recommendations for non-smart mobile phones. Some people have experienced problems with the battery life of the Konka phones mentioned in that article. You can see more here: <https://www.productreview.com.au/listings/konka-r8a?page=2>

Another reader reports that, after checking the reviews for non-smart mobiles, he chose a Nokia 3310 which is a retro update of an earlier popular Nokia. He advises that it has a good reputation for battery life and good speaker phone function.

This phone may sometimes be locked to a telco, but is available in unlocked format as well.

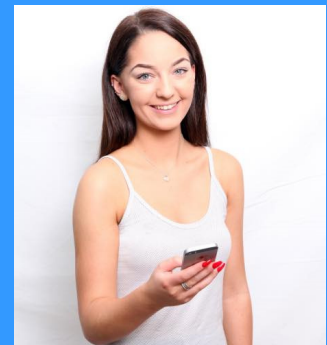
You can see more details about the phone here: <https://www.harveynorman.com.au/nokia-3310-3g-charcoal.html> but it may be available more economically at other outlets.

Thanks for your feedback!

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wireless radiation



Shielding singlets for
kids & women



Head protection



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