



AMTA

Australian Mobile
Telecommunications
Association

EME Update

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Foreword

Welcome to the Autumn 2024 edition of EME Update, AMTA's regular publication on all things related to the science, regulation, and public communications of electromagnetic energy (EME) from mobile devices and network technology.

Ongoing research continues to reinforce the safety of mobile phone technology, with 2024 shaping to be an especially significant year for the release of findings from international studies and reviews. In particular, the overarching review on the state of EME science by the World Health Organisation (WHO) is concluding, with the expected publication of its Environmental Health Criteria (EHC) monograph by the end of the year.

An important input to the WHO review will be the recently released COSMOS (Cohort Study on Mobile Phones and Health), featured in our Update. The study of over a quarter of a million mobile phone users from around the world finds no association with brain tumours. Importantly, the study design overcomes some of the issues of earlier studies on which key health agencies have relied to date, making the COSMOS conclusions much more compelling, and allaying any remaining concerns relating to mobile phones and brain cancer.

We also note in our Update the important contribution of Australian scientists in continuing to take up key roles in the international health agencies, in particular a new appointment at the International Commission on Non-Ionising Radiation Protection (ICNIRP), the standards setting body on which Australia's own EME safety standards are based. The ongoing contribution of Australian scientists will help ensure safety standards remain credible, relevant, and suitable for application in the Australian environment.

The significant international activities in EME science and regulation this year will provide an important fillip for Australia's own EME research programs, particularly with the current federal funding cycle also concluding this year. The identification of research gaps from the WHO review will help to determine future directions for Australia's program and, in particular, the ongoing work of ARPANSA, on which AMTA's members rely for guidance on EME safety for workers and the general public.

This edition of EME Update also looks at how EME levels have remained low (and even lower) with the adoption of 5G around the world, as have EME levels in homes adopting smart technologies powered by Bluetooth, Wi-Fi and mobile connectivity. Other items include international EME policy developments and new advice for doctors who may have patients asking questions about EME.

Enjoy this edition of AMTA's EME Update, we welcome your comments and feedback via contact@amta.org.au.



Louise Hyland, AMTA CEO

INTERNATIONAL STUDY:

Phone EME not linked to cancer, headaches or sleep disturbance

The results from COSMOS (*Cohort Study of Mobile Phone Use and Health*) an **international cohort study** investigating the possibility of long-term health effects are reassuring for phone users.

No evidence of cancer risk linked to phone use

Analysis of data for 264,574 adult COSMOS participants from Denmark, Finland, Sweden, the Netherlands, and the UK **showed** 'no evidence that long-term or heavy mobile phone use is associated with the risk of glioma, meningioma, or acoustic neuroma' (types of brain cancers).

There was no evidence of a link between call time and brain cancer, even for the highest 10% of users.

According to the authors, the COSMOS results imply that earlier findings of a link between mobile phones and cancer were probably due to 'recall bias' or 'other methodological issues.' Past studies relying on participant recall found that heavy users 'greatly overestimated their mobile phone use.'

An important improvement in COSMOS was the prospective collection of operator data, as well as asking people to recall their phone use. This allowed the researchers to 'calibrate' the estimates of call time.

Lead author Professor Maria Feychting from the Karolinska Institutet, Sweden, said:

'The results show that those who spent the most time talking on a mobile phone do not have a higher risk of developing a brain tumor than others.'

Further, the COSMOS authors conclude:

'Our findings to date, together with other available scientific evidence, suggest that mobile phone use is not associated with increased risk of developing these tumours.'

In 2018, a **study** by Australian and New Zealand scientists examined trends for head and neck cancers over a 30-year period and found no increase that could be 'attributed to mobile phones.' Similar results have been reported for other countries.

Phone use (not EME) linked to headaches

Analysis of COSMOS data for the **Netherlands/UK** found that headaches were associated with texting, which produces very low EME levels, and to a lesser extent calling. Statistical adjustments reduced the association with calling but did not affect the link to texting.

The COSMOS data for **Sweden/Finland** showed 'limited evidence' of a small increase in weekly headaches in the group using lower exposure 3G phones and not for use of 2G.

Together these studies suggest that the headache link is likely due to 'lifestyle factors' and not EME.

Phone use linked to disturbed sleep

COSMOS data for 25,000 participants from Finland and Sweden **showed** a link to insomnia among the top 10% of users but again the authors say this was not due to EME, and 'may be related to behaviour and psychological factors.'

COSMOS will continue to track other health outcomes and changes in mobile technology.

Together, these new COSMOS findings will be influential to reviews currently being considered by the World Health Organization (WHO) and the International Agency for Research on Cancer (IARC), see later in this edition.

Australian scientist to become new deputy chair of ICNIRP



Associate Professor Ken Karipidis

When the new International Commission on Non-Ionizing Radiation Protection (ICNIRP) commences in July 2024, Associate Professor Ken Karipidis from the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) will take the role of Vice Chair.

Associate Professor Karipidis **said** of the appointment *'This is a fantastic opportunity to contribute to the international effort to further understand non-ionising radiation exposure and protection.'*

He further noted that *'In Australia, we also use ICNIRP's guidelines to inform the development of our own exposure standards.'*

Associate Professor Karipidis is ARPANSA's Health Impact Assessment Assistant Director. He joined ICNIRP in 2015 as a member of the Scientific Expert Group and joined the main Commission in May 2020. He is currently leading ICNIRP work on the safety of power lines and other electrical equipment and infrastructure.

Radio waves do not affect plants and animals

As part of his work for **ARPANSA**, Associate Professor Karipidis, with Swinburne University, published in 2023 a systematic map of research examining the impact of radio waves on plants and animals in the environment. The review included over 300 studies and found that there is *'currently no substantiated evidence of harm.'* However, more high-quality studies are needed, especially at higher frequencies.

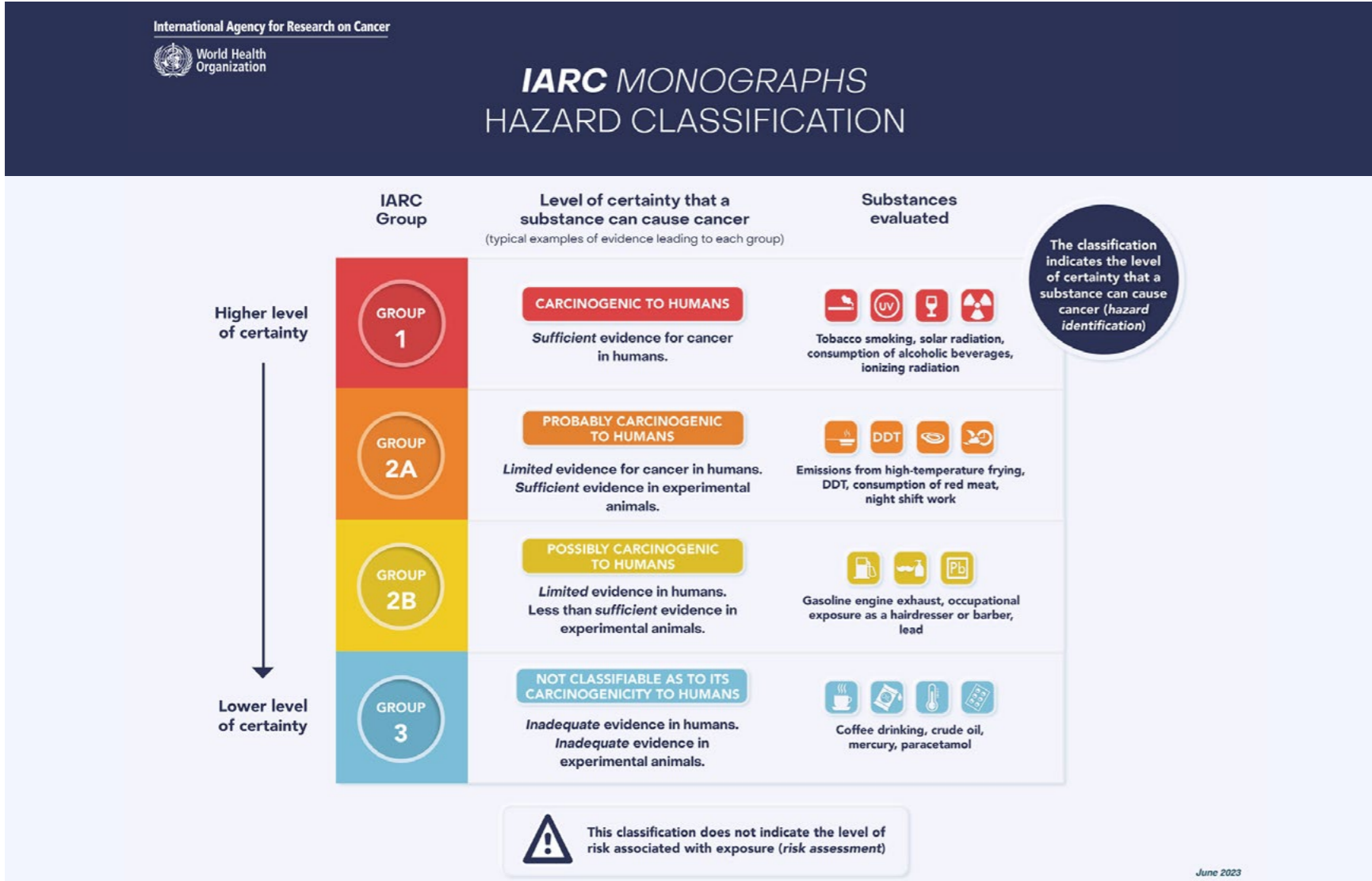
The ARPANSA research map will be an input to the current ICNIRP activity to prepare a statement about environmental effects of radio waves.

Other changes at ICNIRP

Among the seven persons leaving the ICNIRP main Commission in **July** is Professor Rodney Croft from the School of Psychology, University of Wollongong. Professor Croft has been an ICNIRP Commissioner since 2012 and the ICNIRP Chair since May 2020. The new ICNIRP Chair will be Professor Akimasa Hirata from the Nagoya Institute of Technology in Japan.

Every four years, ICNIRP holds an election for Commission members. Main Commission members normally serve no more than three terms.

IARC examines priorities for 2025+



The International Agency for Research on Cancer (IARC) will not relook at radio wave EME before mid-2025 despite being rated a 'high priority' by a 2019 advisory group. This follows confirmation of other agents for November 2024 and early 2025. An **Advisory Group** will meet from 19-22 March 2024 in Lyon, France to recommend priorities for evaluation during 2025-2029.

Recent studies, such as the COSMOS findings for brain cancer in this edition, cast doubt on earlier suggestions of an increased risk linked to phone use. This may influence the outcome of the Advisory Group meeting.

In 2011, an IARC working group classified radio wave EME as a 'possible human carcinogen' (IARC group 2B). The classification was largely due to epidemiological studies reporting increased risk for participants with the most mobile phone use based on self-reported recall. The scientific evidence for occupational and environmental exposures was judged 'inadequate.'

Could errors in use recall explain suggested cancer risks?

The [IARC Biennial Report 2022-2023](#) reveals that an unpublished analysis by IARC scientists shows that errors in recall of past phone use, especially by heavy users, can lead to *'spuriously increased risk.'* IARC says that this *'adds strong evidence that the previously observed glioma risks in only heavy mobile phone users are probably also a result of recall bias.'* Glioma is a type of brain cancer.

In 2022, IARC scientists [examined](#) the observed rates of glioma in Nordic countries and concluded that *'the absence of an observable impact on the glioma incidence rates provides evidence against any significant contribution of mobile phone use to the risk of glioma.'*

Australian scientists call for communication improvements

The 2011 IARC classification of radio wave EME as a *'possible human carcinogen'* has been controversial and open to misunderstanding.

Professors Peter Wiedemann, Monash University, and Rodney Croft, University of Wollongong, [argue](#) for improvements in the communication of the IARC classification of radio wave EME. By way of example, they focus on the IARC press release announcing the 2011 classification decision.

A key point for Wiedemann and Croft is to be clear that IARC looks at the quality of evidence related to *hazard* and not at *risk*. They recommend that IARC *'explicitly inform'* in lay summaries that:

'... only the quality of evidence that an agent might be carcinogenic to humans is assessed, not the magnitude of potential risk.'

They make four other recommendations to reduce *'misunderstandings.'*

IARC already makes changes

In 2019 IARC changed the title of the evaluation programme from *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans* to *IARC Monographs on the Identification of Carcinogenic Hazards to Humans*. IARC explains:

'A cancer hazard is an agent that is capable of causing cancer, whereas a cancer risk is an estimate of the probability that cancer will occur given some level of exposure to a cancer hazard. The Monographs assess the strength of evidence that an agent is a cancer hazard.'

This clarification is prominent in the above IARC infographic:

'The classification indicates the level of certainty that a substance can cause cancer (hazard identification) ... classification does not indicate the level of risk associated with exposure (risk assessment).'

IARC also published a short [YouTube](#) video explaining the hazard classification process.

Advice for doctors: electrohypersensitivity is not a diagnosis

Advice for doctors by the French Occupational Health Society on management of patients self-reporting electrohypersensitivity (EHS) says that *'strictly speaking, there is no diagnosis of EHS.'*

The **advice** was produced for the French Directorate-General for Health and published in December 2023. It is designed to *'answer practical questions concerning the current management of patients, without prejudging changes in knowledge in the medium term.'* Doctors are reminded that *'EHS people regularly suffer from feelings of rejection or incomprehension from caregivers.'*

Electrohypersensitivity (EHS) refers to a variety of non-specific subjective symptoms (such as headache, dizziness, and fatigue), which individuals self-report as being due to EME exposure at levels below safety guidelines. The WHO says that the collection of symptoms is not part of any recognised syndrome.

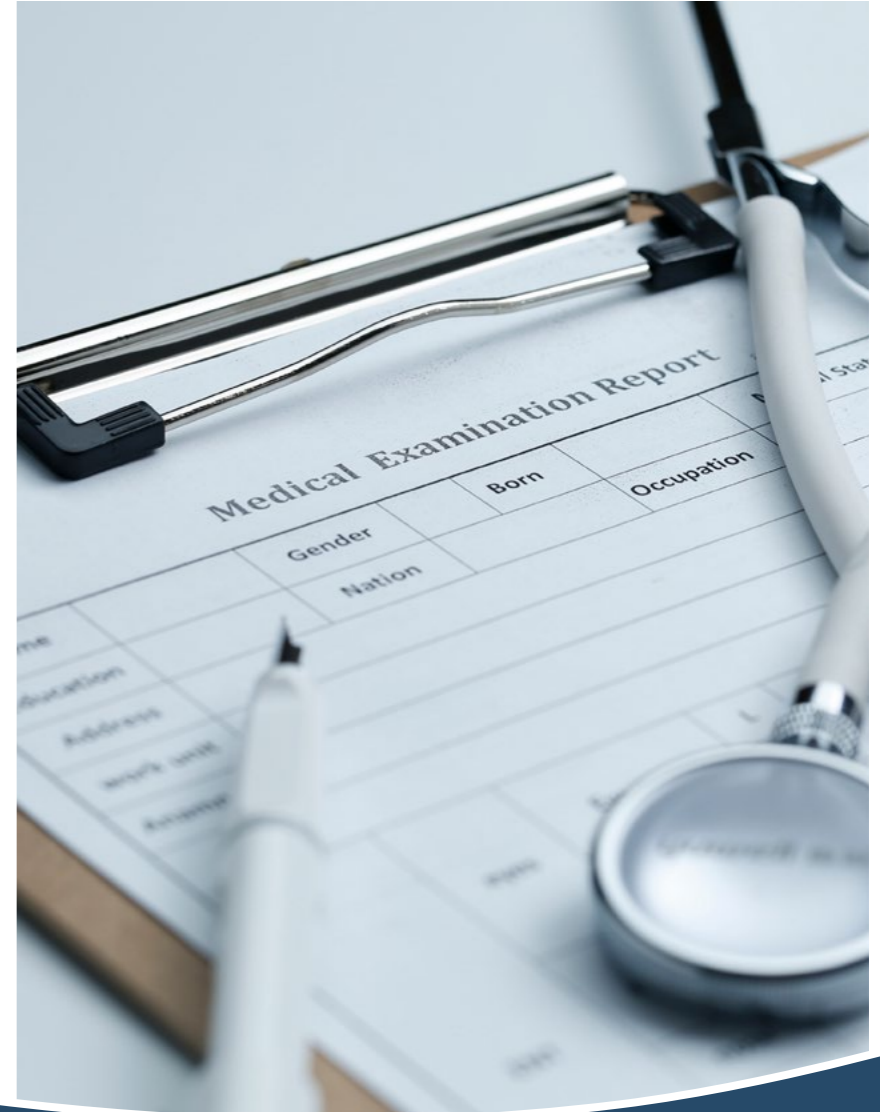
Like the position of the **World Health Organization**, the advice accepts that the symptoms are real, and these symptoms should be used by the treating doctor to guide the diagnostic process. For commonly reported symptoms, the advice provides pointers to existing clinical practice guidelines.

However, exposure avoidance recommendations are not supported by scientific evidence:

'In the current state of science, avoidance measures have not proven their effectiveness and cannot therefore be recommended in the current state of knowledge.'

The report adds that a medical certificate should only report that having examined the patient, certain symptoms are reported that the patient may attribute to EHS. The doctor should not confirm the EHS hypothesis:

'In particular, under no circumstances should a doctor write on a certificate that he/she notes or even confirms an EHS situation.'



If other clinical conditions are eliminated, then ‘*supportive psychotherapy*’ is a suggested therapeutic strategy.

‘The literature thus shows that EHS patients can suffer a nocebo effect and be conditioned to feel such discomfort during such exposure. CBT [cognitive behavioural therapy] would aim to reduce negative conditioning. Comprehensive psychological support is beneficial for expressing the negative impact of the EHS situation.’

Belief predicts self-diagnosis of EHS

Researchers from Hungary and Sweden examined possible links between attribution to an exposure source and symptoms. The sources of self-reported sensitivity were chemical substances, indoor environments (buildings), sounds, and electromagnetic fields (EMFs).

They used data from 2,336 survey responses to a Swedish environmental health study. About 13% of the respondents claimed sensitivity to chemicals. Sensitivity to EMF was the smallest grouping at 2.6%.

Comparing survey responses in 2010 to those in 2013, the **authors** showed that only attribution of symptoms to EMF predicted subsequent reporting of EHS. The picture was mixed for the other exposures.

The authors explain that:

‘... once the idea that EMFs can cause symptoms is accepted by the individual, associations between symptoms and perceived exposure can easily develop ...’

They add that ‘*the conviction that EMFs can evoke symptoms is crucially important for the development of the condition as it lead [sic] to the re-interpretation of symptoms.*’

However, this might not be the full story with psychological characteristics such as modern health worries and paranoid ideation (persistent distrustful thoughts) also playing a role.

A nocebo effect is a detrimental health response produced by negative belief about an exposure or treatment. It is the opposite of the placebo effect. In studies with EHS subjects, symptoms are reported when they believe the EME source is on, even when the source is off.

Improving EME communication in Australia



The Australian Radiation Protection and Nuclear Safety Agency (**ARPANSA**) published an evaluation of its community engagement programs in the September 2023 issue of the Sydney based Sax Institute's journal *Public Health Research and Practice*.

ARPANSA reported that the health complaints register established in 2003 was 'poorly utilised' and 'was not an effective tool in addressing people's concerns.' A total of 180 complaints related to EME sources were received during the operation of the register from July 2003 to April 2022 when it was discontinued, an average of 20 complaints each year.

By contrast Talk to a Scientist, established by ARPANSA in 2016, received about 50 times more enquiries each year.

Associate Professor Ken Karipidis, ARPANSA's Health Impact Assessment Assistant Director, explained that the service is:

'... effective in reducing community concern and educating the public on their real radiation risks, such as exposure to ultraviolet radiation from the sun.'

The main author of the paper, ARPANSA's Dr Chris Brzozek, emphasised the value of two-way communication:

'Our experience has found that having a two-way dialogue, where people can have their concerns heard and resolved by a radiation protection scientist, is more engaging and productive than lodging complaints online.'

Melbourne radio wave levels 700 times below EME limit

In 2022, **ARPANSA** researchers measured radio wave levels at 50 locations across Melbourne to assess typical exposures in public areas like parks and streets. The survey captured radio, TV, mobile networks (including 5G) and Wi-Fi.

In all locations the total measured level from all radio sources was more than 700 times below the Australian EME limit.

Dr Stuart Henderson, ARPANSA's Electromagnetic Radiation Exposure Assistant Director, said:

'While environmental exposure from wireless technology like Wi-Fi, broadcast media, and mobile phones was different in each location, in every case this exposure was still well below the Australian safety limit.'

ARPANSA intends to measure radio wave levels in other Australian cities and regional towns.

The ARPANSA measurements are complementary to the Australian Communications and Media Authority (ACMA) **EME Checker**, which includes measurements for more than 500 base station sites across Australia.

The ACMA measurements include a comparison with carrier predicted EME levels stated in the environmental EME report produced for each site as part of the *Industry Code C564:2020 Mobile Phone Base Station Deployment*. ACMA found that for 99% of sites, the measured EME level was less than 50% of the carrier predicted level.

Deployment code review

The WC112: Mobile Phone Base Station Deployment Working Committee has been established by Communications Alliance to carry out a revision of the C564 Mobile Phone Base Station Deployment industry Code as part of a scheduled five-year review. It will also address issues identified by submissions received during the Code review comment period in 2023.

Australia's mobile network operators conduct approximately 5,000 council and community consultations on proposed new and upgraded network infrastructure each year in accordance with the Code. Ensuring that the Code is fit-for-purpose is therefore an important task.

The Working Committee has representatives from industry, consumers (ACCAN) and local government (ALGA). It is currently considering matters including: which consultation tools and processes will be fit-for-purpose over the next five-years; the handling and retention of information; how best to explain requirements; and providing best practice processes for demonstrating compliance with relevant exposure limits and the protection of the public.

The work of the Committee is expected to be complete towards the middle of 2024 after which stakeholders will be asked to comment on the draft revised Code. The finalised Code will be registered by the ACMA.

WHO review of radio wave safety underway

The membership of the World Health Organization (WHO) Task group on Radiofrequency Fields and Health was announced in late 2022 and includes the Director of the [ARPANSA](#) EME Program, Associate Professor Sarah Loughran.

The 21-member Task Group has been meeting in person and online to review the scientific literature on radio waves and health, perform a health risk assessment and identify gaps in knowledge. The outcomes will be published as a WHO Environmental Health Criteria monograph. This is expected in late 2024.

Australia is contributing [funding](#) to support the Task Group work. The WHO's Radiation and Health Unit Head, Dr Emilie van Deventer, said:

‘This work will help support the development of best-practice guidelines and national legislation to ensure that people remain protected from radio wave exposure.’

Input from systematic reviews

An important input to the work of the Task Group is the WHO commissioned systematic reviews conducted by expert scientists from around the world, including Australia. Systematic reviews are a structured way to summarise and rate the quality of scientific evidence. Three of the systematic reviews are now published and others will appear in a special issue of the scientific journal *Environment International*.

Two of the published reviews assessed the evidence for EME impacts on male fertility (animal and cell studies) and reproductive outcomes (animal studies). Both reviews found evidence of possible adverse effects at levels above the international EME limits. However, the overall quality of the studies meant uncertainty in the conclusions at lower levels of exposure.

[ARPANSA](#) comments that levels below the Australian EME limits do not ‘... *cause any adverse health effects, including adverse reproductive health effects, in human populations.*’

See also a recent large study of sperm quality among Swiss mobile phone users in the Round-up section of this edition.

The third WHO supported systematic review found that population studies of workers and the public did not show a link between radio wave exposures below EME limits and tinnitus, migraine, or any non-specific symptoms. However, challenges in conducting such studies mean the evidence was rated as ‘*very uncertain.*’ A separate review will examine controlled laboratory studies of the same topics.

‘The timely publication of the results of the COSMOS study will make a difference in the current risk assessment by the Radiation and Health department of the WHO in Geneva, which is currently taking place to update the so-called ‘monograph’ on radiofrequency radiation from 1993.’

Professor Hans Kromhout, Utrecht University (the Netherlands) contributor to the COSMOS study and member of the WHO Task Group.

In addition to the systematic reviews, the WHO Task Group will consider a WHO Scoping Report that addresses other health endpoints, and significant individual studies, such as COSMOS. The overall health risk assessment will be accompanied by policy recommendations.

The [GSMA EMF Forum 2023](#) included a presentation by a member of the WHO Task Group and a recording is available.

Low EME levels in Aussie smart homes

Scientists connected to Swinburne University of Technology in Melbourne measured EME from typical smart home devices and found 'very low' levels, typically much less than 1% of the the Australian safety standard for human exposure.

The measurements were conducted at 20 cm in a radio wave anechoic chamber at Swinburne, which allowed the smart devices to be setup to simulate high user activity.

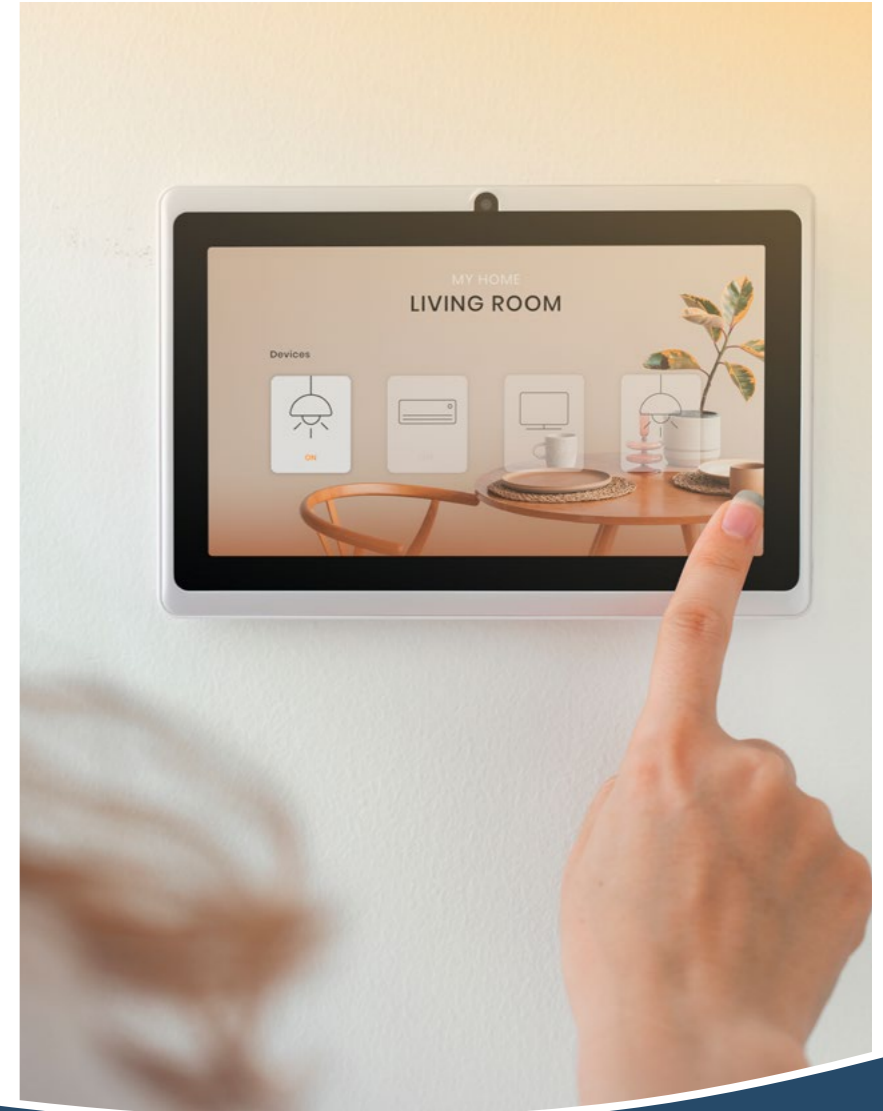
Most of the smart devices used Wi-Fi for connectivity, for example, wireless security cameras, remotely operated LED globes and a power strip. A smart kitchen scale used Bluetooth to connect to a smartphone and two routers supported both Wi-Fi and 4G/5G.

As well as measuring EME levels, the scientists monitored how often the devices transmitted, which was generally less than 1% of the time. There was also a rapid reduction in EME levels when the distance from the device was increased.

The authors say that the combination of low EME level, low transmit time and rapid reduction with distance means that *'cumulative effects of multiple devices in a smart home are not significant for human exposure.'*

Previously, **Telstra** measured EME levels in a smart apartment equipped with up to 100 devices operating at the same time. Wi-Fi produced the highest levels but was still less than 1% of Australian EME limits.

The Swinburne **study** was supported by the Mobile & Wireless Forum.



International EME policy developments



Australia was one of the first countries in the world to adopt **EME limits** based on the latest guidelines from the International Commission on Non-Ionizing radiation Protection (**ICNIRP**), after they were updated in 2020.

International harmonization of EME limits

According to the **GSMA**, Brazil and Colombia in South America; Benin, Mauritius, Senegal and Uganda in Africa; Saudi Arabia and UAE in the Middle East; and Malaysia in Asia have also adopted EME limits based on the ICNIRP (2020) guidelines. At the same time, several of the countries updated their compliance rules to provide for more accurate EME assessment of the advanced antennas used by 5G networks (see the item on trends in EME levels in this edition).

In Europe, Ireland and Malta already apply ICNIRP (2020). The European Commission Scientific Committee on Health, Environmental and Emerging Risks (SCHEER) is working on an update to the European Council Recommendation from 1999 that provides public EME limits. In 2023 **SCHEER** acknowledged that ICNIRP (2020) provides updated limits that can *'protect humans more effectively from emerging technological applications.'* The SCHEER proposal is scheduled to be presented for public consultation in mid-2024.

The Brussels Capital Region of Belgium completed the regulatory process to increase EME limits from 0.1 to 0.6 W/m² (outdoors at 900 MHz). The international/Australian EME limit is 4.5 W/m² at this frequency. September 2023 saw the first 5G antennas approved in Brussels. Commercial services are expected to commence this year.

Italy is following a similar path to Brussels with the decision of the parliament to increase precautionary EME limits from 0.1 to 0.6 W/m² with effect from the end of April 2024. Business Minister Adolfo Urso said that the change *'will improve mobile connectivity, guaranteeing a higher quality of services for citizens.'*

One country not following the trend of harmonizing limits is Chile, which has the most restrictive EME limits in South America. In late 2023, the Council of Ministers for Sustainability and Climate Change approved revised limits that are even more restrictive for the frequencies used by existing broadcast and mobile technologies and less restrictive for new 5G frequencies. In accordance with a 2012 law, the limit values in each frequency range were selected as the average of the five most restrictive EME limits among Organization for Economic Cooperation and Development (OECD) countries.

In countries with restrictive EME limits, potential site capacity is reduced, and sharing may not be possible as the size of antenna compliance zones becomes impractical.

18-fold increase in data, no change in EME levels

A Swiss [study](#) comparing measurements made in 2014 of EME levels outdoors and on public transport with those undertaken in 2021 found no increase in EME despite the 18-fold increase in mobile data traffic over the same period. The research was supported by the Federal Office for the Environment as part of an ongoing project to monitor environmental EME levels.

Similar trends in Greece

For almost 20 years Greece has operated networks of fixed monitors that provide information on EME levels. A recent [analysis](#) found that overall EME levels did not increase or decrease but instead '*fluctuated*' over time. There was a reduction in the contribution from broadcast following the switch-over to digital TV in 2012. Since 2017, there was a small increase in EME levels measured by sensors close to base stations but not in general environmental levels.

Influence of 5G

FMK, the Austrian mobile industry trade association, [reports](#) that after three years of 5G operation the total mobile EME increased from 0.21% to 0.30% of the applicable limit. Most of the increase was due to 2G services at 900 MHz with 5G responsible for only 0.001% of the increase. During the same period mobile data traffic more than doubled.

A similar trend was observed in France where the [spectrum agency](#) measured almost 1,500 base stations before 5G commissioning, and again after four and eight months of operation. There was no significant change at four-months and a slight increase in average EME at the eight-month mark that was mostly due to more 4G data traffic. The agency forecasts that in the long-term there will be a small increase in EME due to additional 5G spectrum bands, which will also provide more capacity for mobile users.

A prior [study](#) by the French spectrum agency showed that continued growth in mobile data traffic would mean higher EME levels in dense urban areas if only 4G was used, than if 5G was deployed.

Advanced 5G antennas

One of the reasons for little change in EME levels with 5G is the use of advanced antennas that direct radio waves towards a mobile phone user, thereby reducing EME in other directions. The ACMA measured base stations with 5G beamforming antennas and reported the highest measured level at 3.2% of the Australian safety limit. The results are available from the [ACMA EME Checker](#).

Current 5G active antennas mainly select from a grid of pre-defined antenna beams. A Polish [study](#) showed that more advanced 5G beamforming techniques, which produce more precisely directed EME, result in further reductions in average EME levels.

Countries with restrictive EME limits have faced capacity bottlenecks. The Belgian regulator ([BIPT](#)) pointed out that about a third of Brussels 4G sites were at medium or high risk of congestion in 2022. This was due to problems with deploying new capacity at existing sites or installing new antennas. Increasing EME limits in Brussels (see our item on policy developments) and permitting 5G active antennas will mean about **25-times fewer new antennas** are needed to provide service.

Round-up of other developments

Australia: pedestrian fall risk

A University of New South Wales [study](#) involving 50 students showed that texting while walking increased the chance of falling due to a slipping hazard. This was still the case when the students walked cautiously. It also meant their texts were less accurate.

Norway: EME concern falls by 50%

A [survey](#) for the Directorate for Radiation Protection and Nuclear Safety found that the *'the proportion of the population who think about the health effects of radiation from mobile phones has more than halved from 2010 to 2023.'* Women (33%) were more concerned than men (19%) about mobile phones. The radiation source of most concern was sunbathing/solarium use.

Switzerland: 'polarized' 5G perceptions

Analysis of four population [surveys](#) conducted between December 2019 and December 2022 shows a *'trend toward a slight decrease in the perceived risk of 5G over time.'* However, there was *'significant polarization'* in the population that will only change over a longer timeframe. Factors that increased 5G risk perception included perceiving 5G as a *'dread risk'*, low trust in authorities and self-reported electrohypersensitivity.

Switzerland: study of male phone users

A [study](#) of 3,000 male mobile phone users found evidence of impacts from frequent phone use but not of carrying the phone in a trouser pocket on some indicators of sperm quality.

[UK fertility experts](#) said that more research was needed and the findings *'should not cause alarm or drastic changes in habits.'*

Professor Alison Campbell, Chief Scientific Officer, Care Fertility commented:

'... Men looking to conceive, or wanting to improve their sperm health should exercise (but not overheat in their groin area), eat a balanced diet, maintain a healthy weight, avoid smoking and limit alcohol and seek help if they are having problems conceiving.'

UK: Jail for mast attackers

According to *BBC News*, an anti-vaccine conspiracy theorist was jailed for 12 months for discussing plans to attack 5G masts. A second defendant was jailed for 12 years on terrorism charges after weapons and replica assault rifles were found at his home.

[FF Telecoms](#), the French operators' association, reports that ten masts per month continue to be vandalized and calls for stronger criminal sanctions.

UK: High Court rejects 5G challenge

A judicial review action alleging that the Secretary of State failed to consider possible 5G health risks failed on all grounds. The [judgment](#) states *'on the facts before me, the risk of harm from 5G is most unlikely if exposure is kept within the guidelines and the government imposes compliance with the ICNIRP guidelines by regulation.'*

Mrs Justice Stacey acknowledged *'the distress to the claimants of the symptoms that they are experiencing,'* however, she ruled that *'there is insufficient evidence to attribute them to exposure to 5G.'*





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