EMR Australia PL
PO Box 347
Sylvania Southgate NSW 2224
www.emraustralia.com.au
[redacted]
ABN: 82 104 370 658

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Human Rights and Technology Project Team
The Australian Human Rights Commission
tech@humanrights.gov.au

Dear Project Team

Human Rights and Technology

Thank you for the opportunity to provide comment on the above project.

This is an important issue that concerns all Australians, both now and in the future, and I look forward to the Project Team considering my comments in response to the issues you have raised.

The information in my submission is derived from over 22 years of working in the area of electromagnetic fields (EMFs) and technology. During this time, I have represented the community on various government and industry committees, including some mentioned below, monitored international developments and health research, written four books, published a quarterly newsletter for 22 years on the topic, co-authored a scientific paper on residential exposures and been in continual contact with the community.

Of particular relevance to the current discussion is technologies that emit radiofrequency (RF) electromagnetic fields, often referred to as wireless radiation, including mobile and cordless phones, wireless modems, baby monitors, tablets, mobile phone and NBN base stations, smart meters and other wireless and smart devices. These technologies are now in widespread use in homes, workplaces, public areas and transport. As a result, the community is now subject to unprecedented levels of RF exposure; this exposure is ubiquitous and growing and all segments of the population are exposed, including the elderly, the sick,

babies and children. Exposure will increase as more RF-emitting satellite networks begin orbiting the planet.

Finally, use of many RF-emitting technologies is addictive.

Section 1

What types of technology raise particular human rights concerns? Which human rights are particularly implicated?

All technologies create change and, therefore, have the potential to impact on human life. The greater the uptake of the technology, the greater the change will be. All change has the potential to be either beneficial or harmful and it's likely that, while some people will benefit, others will not.

This is particularly true of RF-emitting technologies. These technologies are a concern because they've been shown to have harmful effects on:

- health
    - The long-term impacts of exposure are not fully understood.
    - Thousands of studies show adverse effects from levels of exposure below Australian and international standards.
    - RF fields have been classified as Class 2B (possibly carcinogenic) carcinogens (in the same category as lead), by the International Agency for Research on Cancer and, with more evidence of carcinogenicity now available, there is a strong belief the classification should be Class 2A, (probably carcinogenic).
    - Some members of the community, including foetuses and young children, are more at risk from the effects of exposure than others.
- mental health
    - Internet addiction is now listed as a mental health problem in the 'International Classification of Diseases'.
    - Research shows a link between heavy device use and depression and anxiety.
- education/performance
    - Research shows wireless-based learning can reduce academic performance.
- behaviour and relationships
    - Research shows RF-emitting device use is adversely affecting behaviour and interpersonal relationships. [i] [ii]
- the environment
    - The manufacture of mobile phones involves mining of 60 elements, including silver, cobalt and gold, damaging the earth, depleting these reserves and causing habitat loss.
    - The short life span of phones and rapid uptake of new RF-technologies has resulted in enormous quantities of electronic waste, escalating landfill problems and wasting precious metals (contained in mobile phones).
    - From 2007 to 2017, the production of smart phones consumed 968 TWH electricity (approx. one year's supply for India), most of it from coal power stations. [iii]
    - RF fields affect plants and animals and have been shown to affect bee behaviour, potentially affecting pollination and food production.

The human rights threatened by RF-emitting technologies include, but are not limited to the following:

- Equality/non-discrimination
    - People reporting symptoms from exposure to RF-emitting technologies have been discriminated against in many situations, including forcible incarceration in mental institution.[iv]
    - Subgroups of the population unable or unwilling to be exposed to these emissions are discriminated against because they are often unable to visit public locations, unable to find paid employment, socially isolated and face economic hardship.
- Accessibility
    - People affect by RF-emitting technologies are not easily able to access alternative technologies. For example, non-wireless modems have been replaced by wireless modems that expose people in their homes. NBN has replaced wired copper networks with wireless networks and modems emitting high RF fields.
    - People affected by RF-emitting technologies are often unable to:
        - access public buildings using RF-emitting technologies such as Wi-Fi
        - use public transport which has Wi-Fi
        - work in most jobs because of the presence of Wi-Fi and mobile devices
        - access health care because of the presence of Wi-Fi in medical and dental centres and hospitals
        - travel in cars because of the presence of mobile phone base stations
        - attend schools, colleges or universities because of the presence of Wi-Fi.
- Privacy
    - RF-emitting technologies, such as smart meters and mobile phones, represent a privacy risk for consumers.
- Education
    - The use of RF-emitting technologies in nearly all schools and preschools prevents children being educated in a safe environment.
    - Children affected by RF-emitting technologies are currently being withdrawn from schools, most of which have Wi-Fi, and being home schooled.
- Safety for children
    - Australian children are currently exposed to 'possibly' carcinogenic RF-transmitting technologies at preschool and school at levels that can potentially exceed Australian and international limits.
    - Education authorities have no policies in place for limiting children's exposure or teaching safer use of RF-emitting devices.
- Procedural fairness
    - relevant legislation favours the industry and disempowers the community, as described below and in Section 2.
- Participation/empowerment
    - all relevant committees (EME Reference Group, AS2772 standard-setting committee, ARPANSA RPS3 working group, ACIF and CA Telecommunications code-setting committees) allow(ed) only token community participation and are/were dominated by industry members or members aligned (for various reasons) to the industry. Hence there has been no possibility of achieving a reasonable outcome for the community.

- The right to a healthy environment.
    - RF-emitting technologies have negative effects on plants, animals and insects; contribute to landfill problems, consume huge quantities of electricity, damage habitat and pollute our air. All of these impacts have negative consequences for humanity.

Section 2

Noting that particular groups within the Australian community can experience new technology differently, what are the key issues regarding new technologies for these groups of people (such as children and young people; older people; women and girls; LGBTI people people of culturally and linguistically diverse backgrounds; Aboriginal and Torres Strait Islander peoples)?

Problem A: How do we determine which subset of the population will be affected by a new technology?

It is not until a technology is in general use that it's possible to identify which people will be most harmed by its use.

For example, a subset of the population experiences serious health problems from RF fields. Genetic and health factors are thought to play a role, but it is not entirely clear what specific factors are involved and that information will only emerge over time if appropriate, independent research is conducted and appropriate research funding made available – neither of which is likely in Australia, where Telstra plays a key role in the principle research program.

People with cancer are likely to be more vulnerable as there is evidence that cancer cells absorb more radiation than normal cells. So how do we protect people with genetic vulnerability to cancer or people with undiagnosed cancer?

Problem B: The needs of some groups will conflict with the needs of others.

While some parts of society benefit from the sale and use of these technologies – for example, manufacturers, governments (revenue from spectrum sale) and others – others are disadvantaged by these technologies because of the harmful effects summarised in Section 1.

This raises questions such as:

- whose needs are more important?
- who determines whose needs are more important?
- how do we evaluate the need to protect health over the desire to have the latest gadgets?
- what value do we give to the need to protect the environment?

Section 3

How should Australian law protect human rights in the development, use and application of new technologies? In particular:

What gaps, if any, are there in this area of Australian law?

Australian legislation is totally deficient in protecting human rights in relation to RF-emitting technologies. It gives enormous powers to carriers and completely disempowers the community and often state and local governments.

The Telecommunications Act 1997 and the Telecommunications (Low-impact Facilities) Determination 2018 allow carriers to:

- classify RF-transmitting infrastructure as 'low-impact' based on appearance rather than RF emissions
- locate RF-emitting infrastructure at will without approval from state or local governments
- locate RF-emitting infrastructure next to or on top of people's homes without their approval.

There is an urgent need for legislation that protects individuals from RF exposure and empowers them to have a say about the use and location of RF-emitting technology.

Legislation and regulation regarding RF-emitting technologies has been heavily influenced by the industry.

- The RF standard developed by Standards Australia (AS2772), which became the basis of the current ARPANSA (RPS3) standard, was heavily influenced by the telecommunications industry and public exposure levels increased to accommodate 3G technology.[v]
- The Telecommunications (Low-impact Facilities) Determination was amended in 2018 to allow carriers to more easily install 5G technologies.

There is no effective regulation of the telecommunications industry. The Australian Communications and Media Authority (ACMA) is a toothless tiger. For example, it has refused to comment on whether proposed base station infrastructure complies with the Low Impact Facilities Determination, advising that the matter can only be determined by the courts. However, it is beyond the financial capability of most people to take this course of action.

What can we learn about the need for regulating new technologies, and the options for doing so, from international human rights law and the experiences of other countries?

Other countries have introduced legislation or guidelines to reduce exposure to RF-transmitting infrastructure, for example:

- France has banned WiFi in child care centres for children under the age of 3 and has banned the advertising of mobile phones to children under 12.

- Austria, Italy, Russia, Israel and other countries have introduced stricter standards for RF exposure than in Australia.
- The City of Berkley has legislated that mobile phones be sold with notification about the potential for exposure to exceed the federal standard.

Many other international authorities have taken action to reduce RF-exposure of the population. [vi]

What principles should guide regulation in this area?

Regulation should be guided by the principles of:

- Safety – legislation should protect the community.
- Precaution – legislation should enshrine the precautionary approach to potential risks.
- Independence - legislation should not be heavily influenced by the industries that stand to benefit from them.
- Equity – legislation needs to accommodate the rights of all members of society.
- Participation – the community needs meaningful input into legislation.
- Sustainability – legislation needs to accommodate the needs of the environment – which impacts all of humanity.

Section 4

Threats arising from new technologies.

In addition to the threats identified in the discussion paper, there are other ways that new technologies, including RF-emitting technologies, can affect human rights.

Health

Although there is ongoing discussion about this in the scientific community, it is relevant to consider that:

- the long-term impacts of exposure are not fully understood.
- thousands of studies show adverse biological effects from levels of exposure below international standards that could potentially cause serious health problems. These include adverse effects on:
    - cells, including cell communication, cell stress, cellular calcium levels, mast cells
    - DNA
    - hormones
    - brain activity
    - oxidation
    - immunity
    - sperm.
- Exposure has been linked with brain tumours, cancers, sperm impairment and a wide range of symptoms.
- RF fields have been classified as Class 2B carcinogens (in the same category as lead) by the International Agency for Research on Cancer and more evidence of carcinogenicity is available now than at the time of classification.
- Some members of the community, including foetuses and young children, are more at risk from exposure than others.
- Many people report adverse effects from exposure.
- The introduction of new technologies without significant testing creates a potential minefield of health problem.

The environment

There is incontrovertible evidence that the production, use and disposal of RF-emitting technologies has harmful effects on the environment, as described in Section 1. All damage to the environment has consequences for humans.

In addition to legislation, how should the Australian Government, the private sector and others protect and promote human rights in the development of new technology?

All types of new technologies need to be evaluated, not just for their potential to generate income, but for their potential impact on society, *before being released on the market*. This

needs to be done by a team of independent assessors from a broad range of disciplines without economic ties to the developer.

RF-emitting technologies have been developed independent of considerations about potential health impacts and health studies have only been conducted on their health effects *after* their release on the market.

This is too late! Once technologies have been deployed, people become dependent on and addicted to them and benefit from their sale. Vested interests confuse the research into their health impacts (as we saw with cigarettes and are seeing with RF-emitting technologies) and it is difficult and expensive to withdraw them from the market, irrespective of their negative impacts.

Section 5

How should Australian law protect human rights in the development, use and application of new technologies?

Federal legislation has made human rights subservient to industry profitability and that is particularly true of the telecommunications industry. Australian law should protect individuals as well as corporations.

In particular:

(a) What gaps, if any, are there in this area of Australian law?

Rather than gaps, there are gaping chasms in legislation. As discussed in Sections 1 and 3, legislation entirely favours the industry and the rights of the individual and local governments are almost nonexistent.

(b) What can we learn about the need for regulating new technologies, and the options for doing so, from international human rights law and the experiences of other countries?

As described in Section 3, other countries have introduced legislation, policies, guidance, warning labels and other measures to encourage people to protect themselves by limiting their exposure to RF-emitting technologies and to use them more safely.

There is no reason why Australia cannot do the same.

(c) What principles should guide regulation in this area?

As stated above, regulation should be guided by the principles of:

- Safety – legislation should protect the community.
- Precaution – legislation should enshrine the precautionary approach to potential risks.
- Independence - legislation should not be heavily influenced by the industries that stand to benefit from them.
- Equity – legislation needs to accommodate the rights of all members of society.
- Participation – the community needs meaningful input into legislation.
- Sustainability – legislation needs to accommodate the needs of the environment.

In addition to legislation, how should the Australian Government, the private sector and others protect and promote human rights in the development of new technology?

The Australian government can promote human rights in the development of new technology by:

- encouraging and promoting the development of safe technologies – eg wired/fibre optic technologies.
- requiring extensive premarket testing of major new technologies rather than testing them *after* they have been released on the market. These technologies must be independently tested and the testing independently funded.
- put in place appropriate standards for compliance. The Australian (ARPANSA) standard and international (ICNIRP) guideline are based on an outdated paradigm (that only heating effects of exposure need be prevented), the dubious assumption (that exposure can be averaged over a six-minute period) and have been repeatedly shown to be inadequate to prevent significant damage to the body. The standards must, and presently do not, provide protection against low-level, long-term exposures.
- educate consumers on safer use of technology – for example, most people are not aware that:
    - holding a mobile phone against the head or body can result in exposures that exceed exposure limits
    - some mobile phones emit RF signals in airplane mode
    - most modems continue to emit RF fields when turned OFF.
    - baby monitors emit RF fields.
- allow people to have a *genuine* say about the siting of RF-emitting infrastructure in their neighbourhood.
- ensure consumers have choices about the types of technologies they use – eg the ability to have wired or wireless internet connections.
- require modems to have an OFF switch that is genuinely effective at turning off RF transmissions.
- require all RF-emitting equipment to be labelled as 'This device emits radiofrequency radiation'.
- require all mobile phones to be sold with information, such as required by the City of Berkeley (USA) which states: 'If you carry or use your phone in a pants or shirt pocket or tucked into a bra when the phone is ON and connected to a wireless network, you may exceed the federal guidelines for exposure to RF radiation.'
- funding genuinely independent research that does not involve industry participation.
- ensuring that children are not exposed to RF radiation in schools and preschools.
- banning the advertising of mobile phones to young children.

Section 6

How should Australian law protect human rights in respect of AI-informed decision making? In particular:

What should be the overarching objectives of regulation in this area?

The overarching aim of regulation should be to protect individuals and the environment. If no such protection is in place, the 'benefits' of the technology may be outweighed by the harm they cause.

What principles should be applied to achieve these objectives?

As stated above, regulation should be guided by the principles of:

- Safety – legislation should protect the community.
- Precaution – legislation should enshrine the precautionary approach to potential risks.
- Independence - legislation should not be heavily influenced by the industries that stand to benefit from them.
- Equity – legislation needs to accommodate the rights of all members of society.
- Participation – the community needs meaningful input into legislation.
- Sustainability – legislation needs to accommodate the needs of the environment.

Are there any gaps in how Australian law deals with this area? If so, what are they?

Once again, there are gaping chasms in the way legislation protects human rights, as described in Sections 1 and 3.

What can we learn from how other countries are seeking to protect human rights in this area?

Please see comments in Section 3.

Section 7

In addition to legislation, how should Australia protect human rights in AI-informed decision making? What role, if any, is there for:

An organisation that takes a central role in promoting responsible innovation in AI-informed decision making?

Self-regulatory or co-regulatory approaches?

Self-regulation has proved to be a farce. The ACMA has been no more effective than APRA and ASIC were in regulating the Banking industry. The lengthy development and evolution of the CA industry Code: Mobile Phone Base Station Deployment Industry Code is a case in point. It was initiated, ostensibly, to give the community a say in the siting of mobile phone base station infrastructure in their neighbourhoods. The responsible committees were dominated by industry with token community representation. The outcome of the code is that communities are notified about *some* infrastructure in their neighbourhoods but powerless to do anything about it except complain.

A 'regulation by design' approach?

This is preferable to self-regulation. To be effective, it depends on legislation being formulated and enforced by bodies with no ties to RF-transmitting industries.

There is a need for an effective regulator – a role which the AMCA has not performed sufficiently well.

Section 8

What opportunities and challenges currently exist for people with disability accessing technology?

We should rather ask: what opportunities and challenges currently exist for people reporting health effects from RF-emitting technologies for avoiding exposure?

RF-transmitting technologies are widespread throughout the community. People who are unable to tolerate these emissions are, therefore, isolated, segregated and commonly discriminated against, as described in Section 1.

We should not aim to give people universal access to RF-emitting technologies. Rather, we should aim to give them universal access to SAFE communications technologies.

Section 9

What should be the Australian Government's strategy in promoting accessible technology for people with disability? In particular:

What, if any, changes to Australian law are needed to ensure new technology is accessible?

Changes to legislation need to be made to ensure that people are given access to SAFE communications technologies and that people have a choice of whether to use or be exposed to RF-emitting technologies.

What, if any, policy and other changes are needed in Australia to promote accessibility for new technology?

To achieve these outcomes, changes need to be made to legislation such as the:

- Telecommunications Act (1997)
- The Telecommunications (Low-impact Facilities) Determination (2018)
- Communications Alliance Code
- State LEPs

The ACMA needs to be required and enabled to effectively regulate RF-emitting industries.

Additionally, appropriate policies need to be developed by Federal and state Educations Departments.

Educational guidance, such as fact sheets and media statements, need to be issued by the ARPANSA.

Section 10

How can the private sector be encouraged or incentivised to develop and use accessible and inclusive technology, for example, through the use of universal design?

Governments can encourage the development of safe, reliable communications technologies, such as fibre optics, by implementing the suggestions outlined in Section 5.

Thank you for your consideration of these comments and I look forward to your feedback.

Yours faithfully

Lyn McLean
Director

[i] McLean, L, 'Wireless-Wise Families', Melb, Scribe, 2017
ii Swingle, M 'i-Minds: How Cell Phones, Computers, Gaming, and Social Media are Changing our Brains, our Behavior, and the Evolution of our Species', Canada, New Society, 2016
[iii] Greenpeace 'From Smart to Senseless – the global impact of 10 years of smartphones', Feb 2017.
iv Crumpler, Diana, 'Prostituting Science', Aust, Inkling, 2014 and personal communications
v Feedback from a member of the committee.
vi McLean, L, 'Wireless-Wise Families', Melb, Scribe, 2017