02 March 2017

Productivity Commission

To the attention of Commissioner Paul Lindwall

Dear Mr. Lindwall,

Re: Proposed discontinuation of the universal service obligation of landline telephones in Australia

The Productivity Commissions' draft recommendation to phase out Telstra's obligation to provide landlines appears to be premature and short sighted. There appears to be no consideration by Government to the potential risks associated with the use of wireless technology, from a public health, environmental or security perspective. If landlines are no longer provided, this will result in an accelerated uptake of wireless technology in rural areas dependent on NBN fixed wireless and satellite infrastructure. NBN fixed line customers are also potentially impacted by the issue of wireless exposure because modems that are packaged with fixed line NBN solutions by telecommunication retailers often do not allow the customer the ability to turn off inbuilt Wi-Fi or DECT functionality i.e. Telstra's NBN gateway package includes Telstra Air (a public Wi-Fi hotspot) and an inbuilt DECT base station. Although apparently, it is possible to have the Telstra Air function switched off by requesting Telstra not to activate this feature against your service. Most customers would be blissfully unaware of this fact and would also be unaware that their gateway is blanketing them with many different radiofrequencies (RF) simultaneously 24/7.

In May 2011, the INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) classified radiofrequencies as Group 2B potential carcinogen. The basis for this classification was as follows -

'Limited evidence of carcinogenicity': A positive association has been observed between exposure to the agent and cancer for which a causal interpretation is considered by the Working Group to be credible, but chance, bias or confounding could not be ruled out with reasonable confidence"

Since the original review performed by the IARC, we have subsequently had further evidence develop from additional studies looking at humans, RF exposure and brain tumours /neoplasms (Benson 2013, CERENAT case controlled study 2014, Hardell 2014, Hardell 2015, Sato 2016, Prasad 2017) – A number of these aforementioned papers have found similar findings as the earlier Interphone and Hardell studies that formed the basis of IARC's past evaluation and classification. We also have the recent US $25 million National Toxicology Program" (NTP) study providing further evidence of rare cancers, gliomas in the brain and schwannomas of the heart, that only developed in rats that were exposed to cell phone radiation. This suggests a strengthening of evidence and the real possibility that the IARC classification could be upgraded to 2A - probable carcinogen or even 1 - carcinogenic in the future. What does this mean from a legal and financial liability point of view for those who are instrumental in choosing to deploy a technology that may turn out to become a known carcinogen?

I have also noted a number of submissions to the Productivity Commission to date have been made by members of the public who have declared themselves to be electromagnetic hypersensitive (EHS). What consideration is being made to accommodate these people? EHS is real and recognised by the World Health Organisation (WHO) as a disabling condition. Although it is noted that the WHO are yet to formally recognise the association of EHS with manmade electromagnetic radiation (EMR)

– this is likely to be the result of politics and unwanted influences from vested interests and less to do with what clinical and epidemiological studies are suggesting.

From a scientific standpoint, when it comes to EHS, electromagnetic radiation and causality, given the temporal nature of scientific experiments, causality can never be established more firmly than "more or less probable". This is because there is a requirement that contrasting states of affairs that are being measured are fully comparable, differing only through one variable factor. Therefore, it would appear the wrong benchmark is being used by authorities to validate whether RF is a causal factor in EHS because there is recognition by informed medical practitioners that there are multiple biological factors involved in the pathophysiology of EHS and it is also recognised that RF bio effects on biological systems are diverse and multifactorial.

Today, scientific/legal jargon is being used to obfuscate the real risks associated with manmade radio frequencies that are clearly identifiable from available scientific literature. Statements such as "no established evidence" or "no convincing evidence" that RF is harmful are commonly found in the media as well as correspondence with Government departments and Industry when members of the public raise concerns.

However, the available scientific evidence is undeniable, and in relation to specific bioeffects linked to radiofrequency exposure, the evidence is overwhelming.

As an example, scientific studies looking specifically at radiofrequencies within the range of 300MHz to 3GHz, which are typically used for wireless communication, the following bio effects are observed in the Oceania Radiofrequency Scientific Advisory Association's database[2]:

- Oxidative stress, anti-oxidant and vitamin depletion; [151 Effect studies, 16 No Effect and 2 Uncertain Effect papers]
- Neurotransmitter level changes; [16 Effect papers, 2 No Effect papers]
- Altered Enzyme Activity (Metabolic effects); [74 Effect papers, 4 No effect papers]
- Circadian rhythm disruption; [7 Effect papers, 1 Uncertain Effect, 1 No Effect] If we consider Endocrine Effects into the equation it is even more suggestive of circadian rhythm effects]
- Endocrine effects; [38 Effect papers, 10 No Effect, 4 Uncertain Effects]
- Immune system effects; [35 Immune System Effect papers, 3 Effect Positive, 13 No Effect papers, 1 Uncertain Effect papers]
- Cardiovascular effects; [32 Effect papers, 9 No Effect papers, 4 Uncertain Effect papers]
- Ca channelopathy; [11 Effect Papers looking at calcium flux/channel effects, 1 No Effect paper]
- Altered gene expression; [69 Effect Papers, 19 No Effect papers, 3 Uncertain Effect papers]
- Altered brain waves; [67 Effect Papers, 18 No Effect papers, 9 Uncertain Effect papers]

Note: Many of the studies I have referenced (see separate supplementary attachment used to construct the data above) are conducted at or below the current exposure reference levels that are permitted by Australia's RF Standard. A number of studies are an order of magnitude below the current reference levels suggesting that the paradigm of only thermal effects being harmful is specious and out of touch with what biological and medical sciences are suggesting.

One needs to look at what the aforementioned effects are likely to translate to:

Oxidative Stress – effects range from cell dysfunction, cell cycle arrest, apoptosis (cell death) to uncontrolled cell proliferation (tumour development/cancer). Oxidative stress has been linked to neurological degeneration diseases such as Alzheimer's, Dementia etc. The outcome is dependent on how sustained and intense the oxidative stress assault is and the antioxidant capacity of cells being assaulted.

Neurotransmitter (NT) level changes - Can have a significant impact on mental health and wellbeing resulting in behavioural problems, increased agitation and intolerance, anxiety, addiction, depression - > suicide? NT imbalances can lead to headaches, fatigue, concentration difficulties, memory and learning impairment. May also have a significant role to play in some of the subjective symptoms claimed by those who are EHS.

Metabolic effects – Who knows what the outcomes are likely to be as it requires the investigation by epigeneticists. An area of science that is not being brought to bear to actively investigate potential health effects by wireless radio frequency radiation in this country. Metabolic effects are also intrinsically linked to oxidative stress, neurotransmitter level changes, cancer, neurological disorders and other pathophysiological conditions.

Circadian rhythm effects – This can have serious consequences to long term wellbeing and health. As a parallel, one only has to look at the impact night shift work has on workers' health. Circadian rhythm changes can lead to disruption to the endocrine (hormone producing) system resulting in increased risk of cardiovascular disease, diabetes, cancer, mental health problems etc.

Endocrine effects - see Circadian Rhythm effects above. Also, linked to Thyroid and fertility problems.

Immune System Effects – Immune system dysfunction, auto immune diseases, allergies, joint pain, dermatological issues (rashes, dermatitis, eczema etc.)

Cardiovascular effects – bradycardia, tachycardia, arrhythmia and in some cases premature death (heart attack).

Ca channelopathy – Calcium (Ca^{2+}) Flux changes can interfere with cell signalling – has a role to play in oxidative stress, mast cell degranulation -> Increase in the incidence of allergies or their severity.

Altered Gene expression – Refer to oxidative stress, metabolic effects but has also been shown to downregulate genes that normally control cancer metastasis etc.

Altered Brain Waves – Nobody knows what impact this has on health and wellbeing. Certainly, not psychologists who are dominating the research in this country.

All the underlined text above refers to health problems that are currently plaguing our "modern" society and have been growing exponentially in some cases over the last 20 -30 years paralleling the deployment of wireless transmitters in our communities.

Facts:

Cancer is now the leading cause of death[4] surpassing cardiovascular disease for the first time in Australia (2017). WHO in 2014 reported that a cancer tidal wave is approaching[5] – a serious indictment on the WHO and our health department who are failing to do their jobs.

Mental health issues are becoming a significant problem – Government has promised a substantial amount of money to look into this issue[6]. Will they consider the role of manmade electromagnetic radiation, particularly wireless frequencies, as a contributing factor to mental health issues?

A significant proportion of the population is suffering from one or more allergies in developed countries[7] and based on how RF interacts with mast cells (immune system cells) and the release of histamine suggests this increase may be correlated with the rise in manmade electromagnetic radiation levels including radiofrequencies.

ADHD diagnosis is going exponential and it is not simply because of "better diagnostics".[8] Bioeffect research suggests our electrified environment has a role to play.[9]

It is most important to use the evidence presented by science to make informed decisions. The data presented above is taken from available evidence that the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) has in its own database but has failed to fully address in their TR-164 review[3]. Can the Government or the Industry provide "established" or "convincing evidence" that demonstrates the above bio effects being found in scientific literature are harmless to humans?

The Australian RF Standard is based on ICNIRP 1998 Guidelines and as such does not provide any specific guidance to protect the vulnerable portion of the population (pregnant women, children, elderly and those who are sick), stages in life that many of us will go through (notable exception would be pregnancy of course). We are <u>all</u> vulnerable to the effects of chronic RF radiation exposure and have varying capacities to deal with them based on current state of health, diet and stress levels. This situation is exacerbated by radiation protection authorities who lack the broad range of expertise (endocrinologists, epigeneticists, biochemists, physiologists, geneticists, oncologists, neurologists and medical doctors) necessary to make an accurate assessment of the health risks associated with the above bio effects. The very same authorities are also not adequately disclosing to the public all potential risks. This failure to disclose the risks plainly is directly responsible for the current lack of public awareness and explains blasé attitudes demonstrated towards radiation health and safety. The outcome of not informing the public will be more chronic illnesses and cancer.

What the science is suggesting is that potential harm(s) can result from RF exposure and this is what radiation protection philosophy is supposed to be focused on. From a legal perspective, the law does not look for "established evidence of harm" or proof of harm. The law's requirement is far less onerous as it considers the "balance of probability" which certainly can be supported by more than 50+ years' worth of available scientific research. Given that there is evidence available suggesting the potential for harm, precautionary measures should be adopted rather than the short-sighted plan to replace safe and secure wired technology with wireless technology that has not been proven to be safe or secure.

Unfortunately, what we have today is an inconsistent approach for radiation protection. For low dose ionising radiation, where harm is also uncertain, a philosophy of "As Low As Reasonably Achievable" (ALARA) is in place. However, the same philosophy is not being applied to non-ionising

radiation, which RF/microwave emissions belong to. Ionising radiation is managed through a "hierarchy of hazard control" where this concept is promoted as standard practice in the workplace yet the same concept is completely absent in the non-ionising radiation space where more and more wireless transmitters are being deployed in the environment without any controls. As long as wireless transmitters are seen to operate within the basic restrictions they are mistakenly considered to be safe. This inconsistent philosophy could be seen to be duplicitous particularly when both forms of radiation are acknowledged to be damaging to health at high levels, both exhibit similar biological effects at low levels with implications to long term health being uncertain but highly probable.

I personally hope there is an open and honest review of the materials I have submitted to the Productivity Commission. That those who are vulnerable to wireless technology are given due consideration, recognition, accommodation and afforded suitable protection from further harm. I also hope the Government will act responsibly and take an interest in informing the general public of the potential risks associated with wireless devices – they are not and should not be treated like toys as they are today.

Yours Sincerely.

Steve Weller

B.Sc. (Monash), MORSAA

References

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9. Microwave Electromagnetic Radiation and autism http://sensoria.swinburne.edu.au/index.php/sensoria/article/download/144/174

Supplementary Attachment 1: ORSAA Export Study References

Supplementary Attachment 2: EHS Presentation – Productivity Commission