14 February 2017

Paul Lindwall Commissioner
GPO Box 1428
Canberra ACT 2601
By email: telecommunications@pc.gov.au

Dear Mr Lindwall,

Re: Telecommunications Universal Service Obligation Inquiry

Thank you for the opportunity to comment on the Productivity Commission's draft report, dated November 2016, in respect of the above inquiry. I am writing as a private citizen sensitive to pulsed radio frequency electromagnetic radiation (EMR) used for digital communication networks and other purposes, and as such someone who relies on a home landline for work purposes and social communications.

Background

I became ill in 2004/2005 - the time of the development of the 3G mobile network and the beginning of widespread use of smartphones and Wi-Fi networks. After years of ill health but no diagnosis I received advice to reduce my exposure to radio frequency EMR, and moved out of an apartment in Elizabeth Bay to a house in Glenhaven in late 2013. At this time I experienced a 16,000 fold reduction in overnight exposure to radio frequency EMR and saw the following change in symptoms in a matter of weeks:

- sleep returned to normal
- migraines stopped
- allergic rhinitis stopped
- muscle weakness reduced
- fatigue reduced
- sore muscles reduced
- tingling hands and feet stopped
- nausea and upset stomach stopped
- aching thyroid reduced significantly
- brain fog and mental fatigue reduced significantly

I had one month off work at this time and remained out of the city and away from routers and Wi-Fi networks, but also disconnected cordless phones in my vicinity and used my mobile phone minimally.

On return to work in early 2014 my health deteriorated rapidly with the immediate return of the following symptoms when in my workplace in Camperdown:

- nausea
- headaches
- muscle weakness and pain
- fatigue
- brain fog and inability to concentrate

- thyroid aching,
- tingling hands and feet

My workplace is now aware of my sensitivity to radio frequency EMR and has taken steps to accommodate this sensitivity

My workplace is now aware of my sensitivity to radio frequency EMR and allows me to work primarily from home and limit my time in the office – due to the large number of mobile phones in use and the strong Wi-Fi network deployed throughout the institution (with multiple routers and boosters in use on a single floor of the building) leading me to feel chronically unwell when in the office (and afterwards as I recover).

Key infrastructure allowing me to work from home is a home landline and a wired Internet connection. This is in line with the recommendations of the *'EUROPAEM[1] Electromagnetic Field (EMF) Guideline 2016 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses'* that the best way to reduce symptoms of 'electrohypersensitivity' (EHS) is to minimise exposure to EMFs and EMR.

I have requested that a Wi-Fi free area be provided at work but this has been refused. However, my workplace has agreed to partially shield my office and the shielding is being operationalised currently. While the shielding of my office may enable me to work more in my workplace office, I think this is unlikely as the agreement so far has been to shield only one wall in my office.

Background information for the Productivity Commission

Public exposure standards

Public exposure standards developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) based on the 1998 International Commission on Non-Ionizing Radiation Protection (ICNIRP) are set to prevent tissue heating/ thermal damage – based on 6 minute and 30 minute exposures – but are not protective of biological effects at or below allowed exposures (increasingly evidenced in the research literature).

Evidence of harm of increasing

The World Health Organization classified radiofrequency EMR as a Group 2B carcinogen in 2011, that is, as being possibly carcinogenic to humans. Emissions from mobile phones and mobile phone networks, NBN fixed wireless and Wi-Fi fall into this classification. This was on the basis of findings of key population studies (the INTERPHONE Study[2] and work by the Hardell Group in Sweden[3]) that showed the risk of glioma was increased in long-term avid users of mobile phones - 30 minutes a day, 10+ years. Findings of the CERENAT study, [4]released after 2011, confirm this finding.

Further to this, the National Toxicology Program (NTP) in the United States recently released early findings of a bio-assay assessing toxicological and carcinogenicity of radio frequency EMR (used for 2G mobile technology) and found exposed rats (males) had significantly increased risk of glioma and schwannomas (of the heart). See

[1] EUROPEAM – European Academy of Environmental Medicine
[2] Cardis E et al. Int J Epidemiol 2010; 39: 675-694; Occup Environ Med. 2011 Sep; 68(9): 631-40; INTERPHONE Study Group. Cancer Epidemiol 2011 Oct; 35(5): 453-64.
[3] Hardell et al, Int J Oncol 2008; 32(5): 1097-103; Int J Oncol 2009; 35(1): 5-17; Int J Oncol 2011; 38(5): 1465-74; Int J Epidemiol 2011; 40(4): 1126-8; Pathophysiol 2013; 20(2): 85-110; Carlberg M, Hardell L. Oncol Rep 2015; 33(6): 3093-8; Hardell L, Carlberg M. Pathophysiol 2015; 22(1): 1-13.
[4] Coureau G et al. Mobile phone use and brain tumours in the CERENAT case-control study. Occup Environ Med 2014 Jul; 71(7): 514-22.

"Report of Partial Findings from the National Toxicology Program Carcinogenesis Studies of Cell Phone Radiofrequency Radiation in Hsd: Sprague Dawle SD rats (Whole Body Exposures)" for more detail. The NTP released these findings early – in 2016 - as they are in line with epidemiological studies listed above relating to glioma risk but also evidence suggesting an increased risk of acoustic neuroma (a type of schwannoma) in long-term avid users of mobile phones.

There is good evidence of sperm damage related to radio frequency EMR exposures and I refer you to an excellent review article by Adams et al[5], and neurobehavioural problems near Mobile Base Stations are well documented:

- Spain - Navarro et at., Electromag Biol Med 2003; 22;161-169.
- France - Santini et al., Electromag Biol Med. 2003; 22;41-49.
- Poland - Gadzicka E et al, Biuletyn PTZE Warszawa 2006; 14:23-26 .
- Austria - Hutter et al., Occup Environ Med 2006; 63:307-313.
- Egypt - Abdel-Rassoul et al., Neurotoxicology 2007; 28:434-440.
- Germany - Blettner et al., Occup Environ Med 2009; 66:118-123.
- Germany - Berg-Beckhoff et at., Occup Environ Med 2009; 66:124-130 .
- India - Augner C, Hacker GW. Indian J Occup Environ Med. 2009; 13(3):141-145.
- Poland - Bortkiewicz et al., Int J Occup Med Environ Health 2012; 25(1):31-40 .
- Germany - Eger H & Manfred J. Umwelt·Medizin·Gesellschaft, Feb 2010: 130-139.
- Spain - Gómez-Perretta C et al., BMJ 2013; 3(12):1-7.
- Iran - Shahbazi-Gahrouei et al., Electromagn Biol Med 2014;33(3):206-10

Evidence of EHS

Although the research evidence relating to EHS can best be described as equivocal, to date most research into EHS has been poorly conducted provocation studies testing if self-described EHS sufferers can detect an active signal or not and describing how they feel. More recently though, researchers have focused on determining biomarkers and genetic markers for EHS – see article by Belpomme et al. Reliable disease biomarkers characterizing and identifying electrohypersensitivity and multiple chemical sensitivity as two etiopathogenic aspects of a unique pathological disorder. *Rev Environ Health*. 2015; 30(4):251-71.

Why aren't we hearing more about sufferers of EHS?

Despite the increasing numbers of people claiming harm related to radio frequency EMR exposures and choosing to prioritise infrastructure such as landlines and wired Internet connections, these individuals are struggling to gain recognition of their sensitivity. There are a number of reasons for this:

1. Most doctors don't know about EHS and/or don't know what to do about it, and most medical professionals have little knowledge of the growing body of evidence of harm
2. There is a small number of people affected badly and they are struggling to cope with everyday life – in particular if they don't have a partner to support them
3. Individuals who make their sensitivity public are frequently ridiculed in the media, and
4. It is likely many people do not know why they are chronically unwell.

EHS is recognised as a functional impairment caused by an environmental agent in Sweden

While EHS is not recognised in Australia, EHS is recognised as a functional impairment (disability) caused by an environmental agent in Sweden.[6] Sufferers are compensated accordingly and councils are responsible for

[5] Adams JA et al., Effect of mobile telephones on sperm quality: A systematic review and meta-analysis. Environ Int. 2014;70:106-12.

ensuring these individuals live in a safe environment and workplaces are responsible for ensuring these individuals can access work.

The NBN deployment relies heavily on wireless technology even in areas covered by Fixed Line Wireless

Fixed Line NBN uses wireless technology as well as wired technology and this is a serious problem for EHS sufferers; EHS sufferers sensitive to radio frequency EMR need to use wired Internet services exclusively without any wireless infrastructure in their home.

EHS sufferers will not be able to live in Fixed Wireless areas and if they have to – as these areas are in the country areas and likely to provide cheaper housing - they will have severely limited communications options: unable to use wireless Internet for more than a short period of time and having to limit use of mobile phones.

Therefore, on the basis of my sensitivity to radio frequency EMR and the resulting need for me to work from home relying heavily on a landline telephone and a wired Internet connection, but also the high use of wireless technology in the deployment of the NBN (even in areas with Fixed Line NBN) and classification of radio frequency EMR as a 2B possible carcinogen, I oppose the Productivity Commission's recommendation that the Australian Government phase out the telecommunications universal service obligation of providing landlines.

Yours sincerely,

[6] Johannson O. Electrohypersensitivity: State-of-the-Art of a Functional Impairment. Electromagnetic Biology and Medicine 2006; 25: 245-58.