

29 May 2020

Michael Vaughan

By email: fyi-request-11761-e47efba5@requests.fyi.org.nz  
Ref: H202002822

Dear Mr Vaughan

### **Response to your request for official information**

Thank you for your follow up request under the Official Information Act 1982 (the Act) to Ministry of Health (the Ministry) on 3 May 2020 for:

*"I draw your attention to the following statements:*

*(a) "Eighty percent of the in vivo studies showed responses to exposure, while 58% of the in vitro studies demonstrated effects."*

*(b) "The available studies do not provide adequate and sufficient information for a meaningful safety assessment, or for the question about non-thermal effects. There is a need for research regarding local heat developments on small surfaces, e.g., skin or the eye, and on any environmental impact. Our quality analysis shows that for future studies to be useful for safety assessment, design and implementation need to be significantly improved.*

*These statements clearly illustrate the exact point that I was making, i.e. that the existing studies on millimetre waves CANNOT be considered anywhere near sufficient for conclusions to be drawn about safety....and there is a clear need for further research. Which begs the question: Given the lack of quality research into safety, what is the justification for the Ministry of Health's assurances about the safety of 5G and its apparent support for rolling out this technology?*

*I also draw your attention to point number 3 in my original OIA request concerning the Ministry of Health's assertion that the large body of existing research (pertaining to existing 3G, 4G and wi-fi frequencies) can be applied to the much higher 5G frequencies (which have very different characteristics and interaction with the human body, including almost total absorption by the first few millimetres of the skin and eyes). I have asked for the scientific basis for this assumption and this has still not been forthcoming.*

*I request that these points are addressed clearly and specifically and that your answers do not include various links which do not address these specific points directly."*

As mentioned in my previous response (H202001261 refers), the authors of the study you quote nevertheless concluded that “Regarding the health effects of MMW in the 6–100 GHz frequency range at power densities not exceeding the exposure guidelines the studies provide no clear evidence, due to contradictory information from the in vivo and in vitro investigations.” If such exposures did cause health effects, we would not expect the evidence to be so inconsistent but lean towards findings of harm.

As also mentioned in my previous response (H202001261 refers), you will find that the IEEE reference includes research on eye damage and concludes that there is no evidence of ocular disorder due to radiofrequency exposure below the present international guidelines. Recent research on local heat development includes the following:

- Foster et al <https://pubmed.ncbi.nlm.nih.gov/17495663/>
- Foster et al <https://pubmed.ncbi.nlm.nih.gov/28542010/>
- Neufeld et al <https://pubmed.ncbi.nlm.nih.gov/31885092/>.

Concerns about localised heating relate to very intense pulses, which would not be produced by 5G transmitters operating in the millimetre wave bands. Amendments to the International Commission on Non-ionising Radiation Protection (ICNIRP) exposure limits will ensure that they do not permit such exposures. Further information on the radiofrequency electromagnetic fields (RF-EMF) guidelines can be found on the ICNIRP website: <https://www.icnirp.org/en/activities/news/news-article/rf-guidelines-2020-published.html>.

The way radio waves interact with the body has been studied for several decades. It has been known for several decades that the depth of tissue within which the power might be absorbed decreases as the frequency of the radio signal increases. This is due to gradual changes in the electrical properties of tissue. The possible modes of interaction with biological tissue have also been investigated, please refer to the following studies:

- Sheppard et al <https://pubmed.ncbi.nlm.nih.gov/18784511>
- Adair <https://pubmed.ncbi.nlm.nih.gov/12483664/>.

These analyses give no grounds for believing that any other interaction mechanism would occur at the millimetre wave frequencies proposed for use by 5G in New Zealand (which, as also noted previously, have been used by other radio systems for several decades).

I am sure that as time goes on more research will be carried out at these frequencies, but current knowledge provides no persuasive evidence that the limits currently used in New Zealand do not provide protection.

I trust this information fulfils your request. You have the right, under section 28 of the Act, to ask the Ombudsman to review any decisions made under this request.

Please note that this response, with your personal details removed, may be published on the Ministry website.

Yours sincerely



Deborah Woodley  
**Deputy Director-General**  
**Population Health and Prevention**