

Rebuttal of PMCSA.

- ‘Like light, radio waves are a type of electromagnetic radiation.’

Radio waves in use today are not like light, they are digital frequency waveforms and 5G will be highly pulsed. Light waves are analogue.

- ‘Radio waves have been used in NZ for radio since the 1920s and cell phones since the 1980s.’

Radio waves have indeed been used since 1920 but digital frequencies have only been used since 1990.

- ‘The initial roll out of 5G in NZ will use frequencies in the same range as 4G.’

Yes but the delivery system by phased array beam forming technology is different. 5G is un-consented ‘Human subjects research’ and as such contravenes the New Zealand Bill of Rights Act 1990 and the Nuremberg Code.

- ‘Although this will not generate enough intensity to create noticeable heating, there will still be international standards in place to limit overall exposure, and monitoring to double check that this doesn’t happen. The standards are set with a large safety margin to ensure that the total exposure to radio waves is comfortably below safety thresholds for impacts from heating. NZ follows these international standards.’

Yes but the international standards are 20 years old, tested on a mannequin sized head exposed for only 6 minutes. These old standards which are not representative of today’s cell phone use were produced by a private self appointed organisation which disclaims any responsibility for the information it provides. (<https://www.icnirp.org/en/legal-notice.html>) It takes no account of peer reviewed science which proves that biological effects like cancer and sperm damage occur at power densities far below the levels needed for heating of tissue. Many countries including Russia, China, Poland, Switzerland have safety standards much more stringent than New Zealand’s and are therefore more protective to its citizens, this shows the arbitrary nature of these standards.

- ‘The currently available scientific evidence makes it extremely unlikely that there will be any adverse effects on human or environmental health.’

Does ‘unlikely’ mean will not? Does the telecom industry and the government have insurance cover in the ‘unlikely’ event there is a claim or indeed multiple claims? There is already legal evidence as established by courts in Spain, Italy, France and Australia in recognising cell phone injury and Electro Hyper Sensitivity (EHS) thus acknowledging EMR injury from Non Ionising Radiation. In USA in awarding Sarah Mills disability compensation for EHS, this injury causing disability has been acknowledged. Swiss Re and Lloyds of London do not provide medical cover for EMR health related illnesses.

- 'NZ is physically isolated and 5G enables better connectivity with the rest of the world.'

The NZ government has recently spent a lot of YOUR money (\$1.35 billion) installing fibre optic cables. Surely this connects with the rest of the world? Fibre is fast, safe secure, reliable and not subject to weather interference.

- 'The 'Internet of Things' already exists.'

It does in a limited way but it has no resemblance to the future where literally everything will be chipped and sending data into the cloud. A total surveillance system! The energy needed for data storage and data transmission will likely generate hundreds of millions of tonnes of CO₂, the greenhouse gas the world is trying to reduce because of the impact on climate change.

- '5G presents exciting opportunities that have the potential to improve many areas of peoples' lives by facilitating more access to more technology. Some may see this expansion of technology as detrimental, raising issues of privacy, surveillance, and displacement of certain types of jobs. Any benefits must be weighed against these concerns.'

Will it not raise issues of privacy? When our every activity is being recorded in 'the cloud' this is surely a humans rights issue? Displacement of jobs? Artificial General Intelligence will have the capability of replacing most jobs. Artificial Normal Intelligence is already replacing many jobs, indeed Deutsche bank recently announce 18,000 jobs to be replace with AI by 2022.

<https://www.businessinsider.com/deutsche-bank-replacing-18000-jobs-with-ai-machine-learning-fn-report-2019-11>

When Artificial General Intelligence comes on line in the next 5 - 10 years then most jobs can be replaced and when Artificial Super Intelligence comes on line then no-one's job is secure unless you're in the alternative health field because ASI will have no heart , no compassion and no intuition! What are the government contingency plans to deal with this human catastrophe? Isn't the government's job to protect its citizens?

- 'In contrast, the radio waves used for 5G have frequencies that are ten thousand times too low to damage molecules (so are called 'non-ionising'). The only fully documented way 5G radio waves can cause harm is through their heating effect and this can only happen at very high intensities.'

This is clearly untrue. There is a large body of research to show biological effects of low intensity non ionising radiation. Here are a few

Voltage Gated Calcium Channels are opened by low intensity NIR.

<https://www.ncbi.nlm.nih.gov/pubmed/25879308>

Skin sweat ducts can act as helical receivers of EMR at low intensity.

<https://www.ncbi.nlm.nih.gov/pubmed/?term=29459303>

EMR can open the blood brain barrier at low power density, non thermal levels.

<https://www.ncbi.nlm.nih.gov/pubmed/19345073>

- Many researchers have explored possible connections between radio frequency radiation and cancer and as is often the case when there are many separate studies, a small number have reported an association between exposure and cancer, such as mobile phone use and brain tumour risk. There are also isolated lab studies where cells exposed to radio frequency show changes that could be associated with increased cancer risk. These studies are in the minority

If only one study showed a link then it is enough to invoke the precautionary principle, isn't it? Phone providers are warning customers not to have their phones on their body but to keep them at a distance. The US Dept of Health National Toxicology Program recently announced the results of a \$30,000,000, 10 year study. The NTP studies found that high exposure to RFR (900 MHz) used by cell phones was associated with:

- ***Clear evidence of tumours in the hearts of male rats. The tumours were malignant schwannomas.***
- ***Some evidence of tumours in the brains of male rats. The tumours were malignant gliomas.***
- ***Some evidence of tumours in the adrenal glands of male rats. The tumours were benign, malignant, or complex combined pheochromocytoma.***

Rats and mice are frequently used to determine toxicity before human exposure. This is common particularly in the pharmaceutical industry.

- 'Radio frequency radiation was classified as a possible human carcinogen by the International Agency for Research on Cancer (IARC) in 2011. This category catches many commonly encountered things, such as pickles and dry cleaning...'

Potential carcinogens are just that. If pickles and dry cleaning are potential carcinogens then that's what they are. If EM radiation is a potential carcinogen then that is what it is. Are you saying the NTP and IARC scientists are not 'expert' enough? We have a choice as to whether we eat pickles or use dry cleaning. We will have no choice when we are irradiated 24/7 from 50,000+ orbiting satellites and millions of small cells.

- 'The currently available scientific evidence makes it extremely unlikely that there will be any adverse effects on human or environmental health from radio frequency. However, an association between radio frequency and cancer cannot be completely ruled out and this is why the exposure standards are so precautionary.'

Does the telecom industry and the government have insurance cover in the 'unlikely' event there is a claim or indeed multiple claims? If an association cannot be ruled out why are we not exercising the precautionary principle. Exposure standards only relate to thermal effects of a single exposure averaged out over 6 minutes. The standard takes no account of exposures from multiple sources of continual radio frequency radiation over extended time periods.

- ‘People have also expressed concern that radio waves could have other health impacts like headaches, difficulty concentrating, and impaired sleep quality. Neither short nor long term studies have shown conclusive evidence of any of these or other health effects.’

The people experiencing these symptoms would not agree with these studies. Many countries are recognising Electro Hyper Sensitivity disorder and taking action. This is an extract from the US Naval Medical Research Institute which clearly shows the effects you fail to recognise.

Central Nervous System Effects

1. Headaches
2. Insomnia
3. Restlessness (Awake and During Sleep)
4. Electroencephalographic (EEG) Changes
5. Cranial Nerve Disorders
6. Pyramidal Tract Lesions
7. Conditioned Reflex Disorders
8. Vagomimetic Action of the Heart; Sympaticomimetic
9. Seizures, Convulsions

Naval Medical Research Institute
National Naval Medical Center
Bethesda, Maryland 20014, U.S.A.

4 October 1971

<https://rense.com/general96/Navy-Microwave-and-RF-Effects-Brief-1971.pdf>

- ‘Since the NZ standard limits potential exposure, it is important to check that this limit is not exceeded near cell sites, especially when new towers are being installed. To control this, the Ministry for the Environment has additional standards that cover activities like installing new poles and antennas, antennas on building, and adding small-cell units to existing structures. This ensures that potential exposure at all locations are significantly under safe limits.’

These limits still only relate to thermal effects. There is no reference to non thermal effects which you omit and yet there are thousands of peer reviewed scientific papers showing biological effects at non-thermal levels and again the standard takes no account of multiple exposure sources.

- ‘Computer simulations find that insects will absorb more heat from radio waves at higher frequencies than they do from the lower ones currently widely used. Changing the frequency of transmission could in theory make a difference to bees and other insects, however, it has not been shown that this small amount of extra heat absorption causes insect populations any harm or that insects would be more exposed in a real-world environment. There are many natural sources of variation in environmental heat – like sunshine on a clear day compared to a cloudy one – and research has also shown that bees are being adversely impacted by climate change. Bees are very important to our ecosystem so further research and monitoring around radio frequency could be valuable even if the likelihood of real-world effects is low’.

You continue to quote thermal effects. Bees are subject to the non thermal effects like every other living creature. These non thermal effects occur at power densities much lower than the safety standards. Birds and bees use crypto chromes, magnetically sensitive

proteins. (<http://www.ks.uiuc.edu/Research/cryptochrome/>) ***Electromagnetic frequencies have a magnetic component. Exposure to EMR emitted by cell towers may disrupt the crypto chrome based navigation system resulting in inability of bees to locate their hive.***

- ‘Trees are offered protection in NZ under the Resource Management Act.’

So can you guarantee trees won't be cut down to accomodate small cell transmission? We know true 5G frequencies do not pass through trees well. Trees help mitigate man made CO₂.

- ‘The signal only forms when it's needed (like when data is being downloaded), so the potential for exposure is smaller compared to 4G.’

The potential may be smaller but the reality is likely to be different. The 5G phones will have a much higher power output than current 4G phones. In a busy shopping mall or at a rugby match where people are tightly packed and where everyone is using their 5G phones then the target power density will surely be greater and an individual will have no control over exposure levels from small cells and thousands of satellites in low earth orbit. This is unprovoked criminal assault.