

Submissions to the 5G discussion document

Health concerns relating to the roll out of 5G

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Submissions

001 Dominic Cavanagh

Dear Sir/Madam

There is only one item that should be considered with respect to 5G networks at the present time. This is; the impact to human beings of long-term exposure to 5G frequencies. The World Health Organization's International Agency for Research on Cancer classified the microwave radiation from all wireless devices as a possible human carcinogen in 2011. In 2016, the U.S. National Toxicology Program released results of the world's largest study on wireless health risks finding cancer in 5.5 percent of the exposed group and no cancer in the control group. It is certainly reasonable to ask whether 5G technology has the potential to turn these serious health risks into a public health crisis. What consideration has the Radio Spectrum Management, Policy and Planning given to the relative level of risk to children and unborn children and people who suffer from electro hypersensitivity (EHS)?

Last September, more than 180 scientists and doctors from 35 countries sent a declaration to officials of the European Commission to recommend a moratorium on 5G roll-outs. 'We the undersigned, more than 180 scientists and doctors from 35 countries, recommend a moratorium on the roll-out of the fifth generation, 5G, for telecommunication until potential hazards for human health and the environment have been fully investigated by scientists independent from industry. 5G will substantially increase exposure to radiofrequency electromagnetic fields (RF-EMF) on top of the 2G, 3G, 4G, Wi-Fi, etc. for telecommunications already in place. RF-EMF has been proven to be harmful for humans and the environment.'

Massey University's School of Engineering and Advanced Technology began a study of the health impacts of 5G back in 2016 but it has not yet come to any conclusions on the potential long term impact to human beings of exposure to 5G frequencies. How they will credibly test long term effects of this technology in a short time-frame is also a question which needs to be answered.

In light of credible scientific concern on the impact of 5G frequencies to people over time, I call for a moratorium on 5G rollouts in New Zealand until until there are significant studies on the biological effects that 1-4G have already had on us. Thereafter Then 5G should be tested over for for its effects on human beings.

If Radio Spectrum Management, Policy and Planning take a different view, I wish to know why public safety is not the primary consideration in this discussion. If for instance, the position of the policy and planning group is simply we don't know the long term risks to the public of this technology but the economic benefits of higher processing speeds offsets the negative impact of permanent damage to humans, this must be stated clearly and the public must have its say on this by way of referendum if necessary. I call for full transparency on this issue.

Furthermore, I wish to be assured that prior to any Governmental consent being given to any company to roll out 5G the Ministry will satisfy itself and the public that long term exposure

to 5G will not contribute to elevated cancer rates or any other degenerative illness in the public including impaired fertility, neurological symptoms hormonal issues depression sleep issues memory issues and that the research you gather will thoroughly and critically cover all these areas in a balanced way. Furthermore this research should be conducted by bodies which are unconflicted by vested interests.

In closing I quote Professor Trevor Marshall, Director Autoimmunity Research Foundation in California:

“The new 5G wireless technology involves millimeter waves (extremely high frequencies) producing photons of much greater energy than even 4G and Wi-Fi. Allowing this technology to be used without proving its safety is reckless in the extreme, as the millimeter waves are known to have a profound effect on all parts of the human body.”

Sincerely

Dominic Cavanagh

006 Kathy Torpie

I stand firmly against the roll out of 5G and the associated cell towers that will be required. There is not enough evidence about the effects of the additional radiation that this will expose the population to.

I ask you to review information on the following site, particularly the many sources of research shown in the Science link on that site
<https://ehtrust.org/scientists-and-doctors-demand-moratorium-on-5g-warning-of-health-effects/>

Regards
Kathy Torpie

010 Ian Baker

Hello,

Please accept this email as a formal submission on the technical discussion regarding the use of 5G millimeter wave technologies here in New Zealand.

I have grave concerns over the public safety aspect of 5G millimeter waves - concerns that are shared by over 180 international scientists per the open letter published here
<https://drive.google.com/file/d/0B14R6QNkmaXuelFrNWRQcThNV0U/view>

In my view, the current levels of electromagnetic radiation in our cities is already too high -

the harmful effects of this are already proven to include increased cancer risks, cellular stress, genetic damage among many other negative effects on humans. Again this view is supported by over 240 international scientists here <https://emfscientist.org/index.php/emf-scientist-appeal>

The Industry's own marketing material on 5G points to there needing to be more 5G antennas per square km to support this technology - that alone points to a massive increase in the level of RF-EMF - but when you add in the bit about these waves being 'absorbed' by 'buildings, trees and rain' - it's conspicuously absent that these waves will also be 'absorbed' by the many humans in our cities and towns.

I strongly advocate for a significant amount of testing on this technology to ensure that it is safe deployment in close proximity to humans before it is rolled out any further. Further, this testing needs to be completely independent of telecommunications industry bodies as they have a significant vested interest in the profits they are relying on from this technology.

Please do not let this become the next tobacco, where we look back in 20 years and realize we have irradiated most of the humans within New Zealand - it is a step we cannot take back.

Thankyou
Ian Baker
Concerned New Zealand Citizen

012 Marta Fisch

Submission to:

“Preparing for 5G in NZ Discussion Document by Ministry of Business, Innovation and Employment”
March 2018, Deadline April 30, 2018

(Italics are quotes from discussion document; my comments are in bold.)

We are seeking feedback on whether industry considers 5G antenna will comply with the NESTF.

I submit that not only industry but also health and local governments be asked to consider this question.

Background

The New Zealand standards for non-ionizing radiation¹ are consistent with international standards. For cell sites, the NESTF requires installations to comply with the New Zealand

standard. Some territorial local authorities also require compliance with these standards when issuing resource consents for cell sites under the Resource Management Act 1991.

The first systems able to meet the 5G technology specifications are likely to be enhanced 4G networks. Standalone 5G networks are anticipated to become available from 2020 onwards. Early 5G networks are expected to use existing 4G networks to manage device access to the network and functionality (i.e. to act as the control layer). The infrastructure requirements for 5G are likely to be different to 4G. Cell sites are likely to use panel antenna, increasing the overall size of the antenna used if the current frequencies designated for 4G were to be used for 5G. Use of the super high or extremely high frequencies will reduce the size of antenna for 5G significantly. However, this will also require a greater density of antenna, particularly in urban areas. Early indications are that, even with sub 6 GHz spectrum, the number of cell towers in urban areas required to deliver a 5G cellular mobile network will double. Use of the super high or extremely high frequencies will increase the required density of cell sites further.

Question: How will local governments be equipped to ascertain whether these high density sites are safe so close to homes when there is no conclusive evidence of their safety yet (see attached), nor will have time to assess each application if government is intent on quick rollout. We have already experienced the “cut and paste” approval of celltowers when consent applications are fast-tracked by paid for, favoured customers via the preferred consents office at Auckland Council.

why would the MBIE enquire about avoiding resource consents:

*maximum scale and location of telecommunications facilities that can be installed **without** requiring resource consent from a local authority.*

My understanding is that the industry standards and regulations are set by the same agent, therefore posing severe conflict of interest.

Question: How can the establishment of standards be tested by and regulated by an independent scientist?

My personal experience as a homeowner adjoining a private property that rents land to three telecos, is that the municipal authority, in my case Auckland Council, approved 2 celltowers 25 and 60m from our bedrooms. The consent was dependent on compliance with NES. When I asked the Council Compliance Officer to request confirmation from Spark of compliance, the officer did not know who to contact and contacted Spark maintenance department. When I followed up my request 2.5 months later he told me that he'd contacted the wrong department. No one at Spark had forwarded Council's official

compliance request to the correct department. I still do not know the answer.

2.2 Managing Potential Health Effects

There is no discussion under this topic. International practice would require this. I am dumbfounded that this is left blank.

The national environmental standard for telecommunications facilities (NESTF) sets the NZS 2772: Part 1: 1999 Radiofrequency Fields Part 1 – Maximum Exposure Levels – 3 kHz to 300 GHz.

In addition, we are considering the future of the 600 MHz and 1400 MHz bands as there appears to be growing consensus on these bands as future 5G bands.

Question:

The MBIE 5G discussion document explores allowing a total of 280 MHz of spectrum from 3410 to 3690 MHz to be available for 5G networks, which exceeds the current NES. Please explain, if this is inaccurate.

Network operators are likely to invest in 5G networks in urban areas initially. The government could encourage a fast roll out through imposing a short timeframe for deployment in these areas. Given that some operators are still progressively rolling out their 4G network, a fast deployment of 5G may not be accommodated within their current investment plans. The government could take a similar approach to that used for the 700 MHz band and encourage roll out in rural areas where it may be less commercially attractive to roll out 5G particularly using frequencies above 3 GHz. These options are not mutually exclusive.

Re-planning options include:

- *creating new unencumbered management rights dedicated for 5G mobile,*

Question: Unencumbered by what?

Sincerely submitted by

Marta Fisch

013 Gramya Alonso-Barth

Hi there,

With all respect, I DON'T WANT 5G CELLULAR MOBILE TECHNOLOGY In NZ.

It is VERY harmful for our health. I rather be (and my children and friends) healthy than increase mobile connectivity and be sick.

I hope you do more research and find out why there are big demonstrations against it in the USA.

Thank you very much for your consideration,

Gramya Alonso-Barth

014 Kevin Coffey

Thank you for the invitation and opportunity to comment. This submission responds to the following two questions posed by the discussion document in Section 2.2 Other Regulatory Issues:

Q3. What regulatory issues need to be considered from a 5G perspective in New Zealand?

Q4. What aspects of these regulatory issues are most significant for 5G?

WHAT REGULATORY ISSUES?

The document in Section 2.2 includes the issue: *"managing any potential health effects from increased exposure to non-ionizing radiation."* This is the issue which I consider needs the highest level of scrutiny by an absolutely independent and unbiased group of suitably qualified individuals.

The potential health effects on human beings – especially infants, children, the elderly and unwell – overrides, in my opinion, every other issue connected with preparing for 5G. I offer the following in support of this view.

No matter what economic and developmental gains may be cited in support of 5G, they have absolutely no standing if the health of human beings and other living organisms is potentially going to be compromised. In fact there is sufficient available evidence and concern coming out of scientific and health bodies world-wide to show that the health effects from 5G and associated technologies are factual rather than potential – and especially beyond the oft mentioned thermal effects.

To immediately get to the heart of the matter I draw your attention to the information presented in the following ...

Top of the list is the document presenting the concerns of 180 scientists and doctors involved in the area of Electromagnetic Frequencies world-wide including Radio Frequencies and Millimeter Wave Technology. Their concerns have been presented to the United Nations and other bodies.

<https://drive.google.com/file/d/0B14R6QNkmaXuelFrNWRQcThNV0U/view>

[Because of its importance I have also attached this file below.]

Joel M. Moskowitz, Ph.D. is Director of the Center for Family and Community Health, School of Public Health, University of California, Berkeley. His report on the health impacts, especially non-thermal, of 5G millimeter-wave transmission technology is here ...

<https://www.saferemr.com/2017/08/5g-wireless-technology-millimeter-wave.html>

The really important part is the second section: *What does research tell us about the biologic and health effects of millimeter waves?*

The following abstract of a research paper published in the International Journal of Hygiene and Environmental Health clearly points to the emerging knowledge of the health dangers posed by 5G technology ...

<https://www.ncbi.nlm.nih.gov/pubmed/29402696>

As you probably realise, the information presented above represents a very small percentage of the reports and papers clearly pointing to the need for a hold on 5G technology until such time as the telecommunication industry can prove beyond any reasonable doubt that human beings will not be harmed by exposure to its wave emissions. Such proof needs to be presented to a thoroughly independent and qualified body of individuals as mentioned above.

If 5G technology were to be pervasively installed across New Zealand under regulations established for much earlier transmission technologies and without acceptable proof of it doing no harm to human beings and other living organisms then it's very likely that this could be established as constituting an experiment on the human population. The ethical standards required in order to carry out experiments involving the health of human beings is covered by the Nuremberg Code.

I end my submission with the following statements established on August 19, 1947, by the judges of the American military tribunal in the case of the USA vs. Karl Brandt et. al. as they delivered their verdict at the Nuremberg War Criminal Trials.

My hope is that when you have considered all the information contained in this submission you will advise an immediate hold on all preparations for 5G in New Zealand.

The Nuremberg Code 1947.

[FROM TRIALS OF WAR CRIMINALS BEFORE THE NUREMBERG MILITARY TRIBUNALS UNDER CONTROL COUNCIL LAW NO. 10. NUREMBERG, OCTOBER 1946–APRIL 1949. WASHINGTON, D.C.: U.S. G.P.O, 1949–1953.]

PERMISSIBLE MEDICAL EXPERIMENTS

The great weight of the evidence before us is to the effect that certain types of medical experiments on human beings, when kept within reasonably well-defined bounds, conform to the ethics of the medical profession generally. The protagonists of the practice of human experimentation justify their views on the basis that such experiments yield results for the good of society that are not procurable by other methods or means of study. All agree, however, that certain basic principles must be observed in order to satisfy moral, ethical and legal concepts:

1. The voluntary consent of the human subject is absolutely essential.

This means that the person involved should have legal capacity to give consent; should be so situated as to be able to exercise free power of choice, without the intervention of any element of force, fraud, deceit, duress, over-reaching, or other ulterior form of constraint or coercion; and should have sufficient knowledge and comprehension of the elements of the subject matter involved as to enable him to make an understanding and enlightened decision. This latter element requires that before the acceptance of an affirmative decision by the experimental subject there should be made known to him the nature, duration, and purpose of the experiment; the method and means by which it is to be conducted; all inconveniences and hazards reasonably to be expected; and the effects upon his health or person which may possibly come from his participation in the experiment.

The duty and responsibility for ascertaining the quality of the consent rests upon each individual who initiates, directs or engages in the experiment. It is a personal duty and responsibility which may not be delegated to another with impunity.

2. The experiment should be such as to yield fruitful results for the good of society, not procurable by other methods or means of study, and not random and unnecessary in nature.

3. The experiment should be so designed and based on the results of animal experimentation and a knowledge of the natural history of the disease or other problem under study that the anticipated results will justify the performance of the experiment.

4. The experiment should be so conducted as to avoid all unnecessary physical and mental suffering and injury.

5. No experiment should be conducted where there is an a priori reason to believe that death or disabling injury will occur; except, perhaps, in those experiments where the experimental physicians also serve as subjects.

6. The degree of risk to be taken should never exceed that determined by the humanitarian importance of the problem to be solved by the experiment.

7. Proper preparations should be made and adequate facilities provided to protect the experimental subject against even remote possibilities of injury, disability, or death.

8. The experiment should be conducted only by scientifically qualified persons. The highest degree of skill and care should be required through all stages of the experiment of those who conduct or engage in the experiment.

9. During the course of the experiment the human subject should be at liberty to bring the experiment to an end if he has reached the physical or mental state where continuation of the experiment seems to him to be impossible.

10. During the course of the experiment the scientist in charge must be prepared to terminate the experiment at any stage, if he has probably cause to believe, in the exercise of the good faith, superior skill and careful judgment required of him that a continuation of the experiment is likely to result in injury, disability, or death to the experimental subject.

Of the ten principles which have been enumerated our judicial concern, of course, is with those requirements which are purely legal in nature — or which at least are so clearly related to matters legal that they assist us in determining criminal culpability and punishment. To go beyond that point would lead us into a field that would be beyond our sphere of competence. However, the point need not be labored. We find from the evidence that in the medical experiments which have been proved, these ten principles were much more frequently honored in their breach than in their observance. Many of the concentration camp inmates who were the victims of these atrocities were citizens of countries other than the German Reich. They were non-German nationals, including Jews and "asocial persons", both prisoners of war and civilians, who had been imprisoned and forced to submit to these tortures and barbarities without so much as a semblance of trial. In every single instance appearing in the record, subjects were used who did not consent to the experiments; indeed, as to some of the experiments, it is not even contended by the defendants that the subjects occupied the status of volunteers. In no case was the experimental subject at liberty of his own free choice to withdraw from any experiment. In many cases experiments were performed by unqualified persons; were conducted at random for no adequate scientific reason, and under revolting physical conditions. All of the experiments were conducted with unnecessary suffering and injury and but very little, if any, precautions were taken to protect or safeguard the human subjects from the possibilities of injury, disability, or death. In every one of the experiments the subjects experienced extreme pain or torture, and in most of them they suffered permanent injury, mutilation, or death, either as a direct result of the experiments or because of lack of adequate follow-up care.

Obviously all of these experiments involving brutalities, tortures, disabling injury, and death were performed in complete disregard of international conventions, the laws and customs of war, the general principles of criminal law as derived from the criminal laws of all civilized nations, and Control Council Law No. 10. Manifestly human experiments under such conditions are contrary to "the principles of the law of nations as they result from the usages established among civilized peoples, from the laws of humanity, and from the dictates of public conscience."

Whether any of the defendants in the dock are guilty of these atrocities is, of course, another question.

Under the Anglo-Saxon system of jurisprudence every defendant in a criminal case is presumed to be innocent of an offense charged until the prosecution, by competent, credible proof, has shown his guilt to the exclusion of every reasonable doubt. And this presumption abides with the defendant through each stage of his trial until such degree of proof has been adduced. A "reasonable doubt" as the name implies is one conformable to reason — a doubt which a reasonable man would entertain. Stated differently, it is that state of a case which, after a full and complete comparison and

consideration of all the evidence, would leave an unbiased, unprejudiced, reflective person, charged with the responsibility for decision, in the state of mind that he could not say that he felt an abiding conviction amounting to a moral certainty of the truth of the charge.

If any of the defendants are to be found guilty under counts two or three of the indictment it must be because the evidence has shown beyond a reasonable doubt that such defendant, without regard to nationality or the capacity in which he acted, participated as a principal in, accessory to, ordered, abetted, took a consenting part in, or was connected with plans or enterprises involving the commission of at least some of the medical experiments and other atrocities which are the subject matter of these counts. Under no other circumstances may he be convicted.

(End of submission)

088 Andy Hooley

Radio.Spectrum@mbie.govt.nz

To whom it may concern

Submission on the subject of "Preparing for 5G in NZ"

I oppose the roll out of 5G in New Zealand and request that issues of human health and the non thermal effects of non native frequencies be prioritised and investigated by independent authorities prior to any formal agreement on deployment.

Q3. What regulatory issues need to be considered from a 5G perspective in New Zealand? Regulatory impacts towards health and non thermal effects on human life needs to be considered by 5G with the deployment of more higher transmitting frequencies in our environment.

Q4. What aspects of these regulatory issues are most significant for 5G? The addition of 5G frequencies alongside all other frequencies from non domestic industry transmissions in the environment needs to be considered against the non thermal effects on human life.

The evidence towards the effects of microwave radiation on all human life is overwhelming and must be considered as a factor in any consideration towards saturating the general public in even more high frequencies.

The NZS 2772 standard written in 1998 is 20 years old and does not reflect the health effects covering the current saturation of microwave radiation on the general public.

Thank you

102 Rebecca Smith

See: http://www.stayonthetruth.com/resources/Washington_State/Washington-State-Department-of-Health-on-Wi-Fi-in-Schools.pdf

See also in pdf attached

Sent from hardwired computers and hardwired internet connections with all wireless functions turned OFF or all wireless hardware removed for our health and safety.

www.thermoguy.com/

curtis@thermoguy.com



March 3, 2014

Environmental Public Health
Washington State Department of Health
P.O. Box 47827
Olympia, WA 98504-7827

Re: Responding To Wi-Fi Safety Concerns in Our Schools

WSDOH document link:

http://www.doh.wa.gov/Portals/1/Documents/4100/WiFiSafety_Jan2014_DraftFinal.pdf

Dear Sir/Madam:

Although I am responding to the document through the public comment section, it is critically important the Department of Health and all school districts understand my professional background is specific to this important discussion. Residents concerned about wireless exposure have very valid concerns and Washington State has not been fully informed.

As Thermal Radiation Consultants(35 years) for a wide scope of industry, governments, medicine, medical education, fire services, insurers, military, etc, our work pertains to atoms and molecules of all matter above absolute zero. Absolute Zero is -273 deg. C or -459 deg. F.

Here are the first 2 lines of Wikipedia definition that can be seen at this link.

http://en.wikipedia.org/wiki/Thermal_radiation

“Thermal radiation is [electromagnetic radiation](#) generated by the [thermal motion](#) of [charged particles](#) in [matter](#). All [matter](#) with a [temperature](#) greater than [absolute zero](#) emits thermal radiation. When the temperature of the body is greater than absolute zero, interatomic collisions cause the [kinetic energy](#) of the atoms or molecules to change.”

When wireless industry refers to the language using thermal or non thermal, it is misleading information and reflects the Specific Absorption Rate limits in the discussion. Non thermal is absolute zero, anything above -459 deg. F is thermal and the basis for **all** sciences.

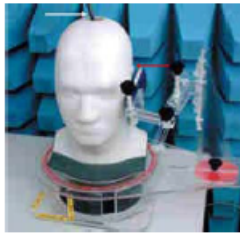
It would and should alarm the WSDOH as well as school districts that even though scientific literature on wireless exposure is based on decades of studies, exposure codes admit causation and biological plausibility linking RF EMFs to adverse health effects was missing.

The Government of Canada's Health Canada uses Safety Code 6 for the limits of human exposure to RF EMFs and the same science standards used by the FCC and other international governing bodies. http://www.thermoguy.com/pdfs/Safety_Code_6.pdf

"Bringing the Invisible to Light Since 1979"

The strength of exposure codes in protecting the public is on page 9, paragraph 3 of Safety Code 6. **"The predominant health effect to be avoided is the unintentional stimulation of tissue as is the heat effect"** Intentional stimulation of tissue is medical imaging where people are put in an intended position of use and other parts of their body protected or workers in an RF EMF environments for short periods of time.

Health Canada, the FCC and other governing bodies have adopted the Specific Absorption Rate for the limits of human exposure. Here is a picture of a Sam Phantom Model used for testing.



All cellphone manufactures have to submit their phones for testing. The red arrow highlights the base of the antenna where a localized area of the skull is thought to be heated. The white arrow highlights the temperature probe in the hole in the test model's head where liquid is poured.

The same test is adopted for Wi-Fi and Smart Meters except 24/7 exposure has been deemed safe because the laptop and meter are not held against the head like a cell phone.

The 16 documents referred to on page 8 in the WSDOH based their references to harm on the same types of test models. When it is reported there are no peer reviewed studies showing harm, you can see why. This test dummy doesn't have any biological information, it is all based on whether water molecules heat and ridiculous, baseless science.

Health Canada's radiation professionals confirmed in our phone conversations that no cell phone antennas, Wi-Fi Routers or wireless smart meter grid was considered in the SAR test. Neither was any bio/electrical/chemical information associated with a human.

As a result, September 14, 2010 causation and biological plausibility linking the frequencies to adverse health effects was reported to provinces as well as Health Canada as jurisdictional authorities.

October 26, 2010 causation and biological plausibility was presented to Canadian Parliament's Standing Committee on Health by Canadian government certified electrical professionals at their request. Although electricity isn't a singular opinion, I was the reporting professional.

January, 2011 causation and biological plausibility linking the frequencies to adverse health effects was lectured in medical education for CME credits at the University of Central Florida. Here is a link to health education administration's letter on the accreditation and includes myself as adjunct faculty.

http://www.thermoguy.com/pdfs/Integrative_Health_Forum_on_Medical_Education_Including_Wireless_Exposure.pdf

WSDOH medical professionals can contact the health education administrator and have candid discussion with medical peers.

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During recent utility applications for wireless smart meters, I cross examined FortisBC utility experts at the BC Utilities Commission oral hearings about smart meter frequencies as well as the 2nd antenna inside the meter for Wi-Fi RF EMFs planned for inside each building.

FortisBC hired Exponent Inc to represent their Exponent Report on wireless safety. Engineer Mark Warren confirmed blanket coverage of 17,000 sq. Kms or 6564 sq miles to communicate with meters. Dr. Yakov Scholnikov confirmed frequency incompatibility with humans as well as the high speed oscillations of the frequencies 1.8 billion times per second for smart meters and 4.8 billion times per second for Wi-Fi at 2.4 Ghz.

Dr. William Bailey confirmed the voltages of cells, the many frequencies of the brain and body as well as the fact they were not included in their report on risk assessment or included in Safety Code 6. Dr. Bailey further confirmed frequencies triggered nerves in labs and that the nervous, hormonal and immune systems work together. (At lower frequencies, Safety Code 6 refers to electromagnetically inducing currents within biological tissue that can lead to nerve and muscle depolarization. Page 9, 3rd paragraph)

Dr. Bailey also confirmed that in order for RF EMFs to hurt people, they had to be exposed.

There are real reasons we wire the world, it is to confine frequencies to an insulated known conductor. That is why wireless requires extremely careful consideration as everything in the EMFs is effectively in an electrical circuit.

Here is a link to a Wi-Fi Risk Advisory which contains reports by industry dismissing any harm. The BC CDC and Chief Physicist Tony Muc make ridiculous statements about children in a classroom not being close enough to the laptop to be burned. Dr. Muc actually uses a stove element analogy that short distances from the laptop or device keep children safe. Both reports left out the routers bathing the classrooms and putting children as well as teachers inside an electrical circuit.
<http://thermoguy.com/wi-fi-health-risk-advisory-2/>

Cross examination of FortisBC experts confirmed blanket radiation and Mark Warren said engineers as well as others were not informed nor were they going to inform municipalities. As you can see by the test model of the SAR, the plastic head has no relevance to building codes but it is being used to bypass municipal jurisdictions including building code compliance. Mark Warren works for a utility and referred to electromagnetic induction as a hypothesis when it is how electricity is generated. The Exponent group also referred to bees and pollinators adapting to RF EMFs even though Scholnikov confirmed 900 Mhz going into the ground over 39 inches.

It was the FortisBC application for wireless that confirmed governments allowed utilities to bypass all regulatory process. No sciences, academia, medicine including medical education, insurers, engineers, architects, municipalities, lawyers, etc were consulted or informed.

Page 7, second paragraph of Safety Code 6 states **“The rate and distribution of RF energy absorption depends strongly on the frequency, intensity and orientation of the incident fields as well as the body size and its constitutive properties (dielectric constant and conductivity).”**

“Bringing the Invisible to Light Since 1979”

The router frequencies hitting children as well as teachers from head to toe at all different angles requires impossible calculations by engineers because every movement within the EMF changes the orientation to the EMFs.

Wi-Fi frequencies in schools will compromise the million plus students as well as building code compliance. The SAR is an admission currents are being induced into children, teachers, support staff and including a fetus. The RF EMFs associated with Wi-Fi at 2.4 Ghz will expand and collapse inside bodies, walls, roofs 4.8 billion times per second. That induces currents as well as the high speed polarization 180 degrees 4.8 billion times per second will rip anything apart and the peer reviewed science is called electricity.

The frequency bombardment will accelerate corrosion of buildings, infrastructure, fire separations and induce electrical charges in volatile areas that can cause explosions or fires. There is no margin of error. Here is a link showing you how 60 Hz which is considered extremely low frequencies can cause catastrophic electrical failure leading to fires, explosions, lost production, injury or loss of life. This is an industrial application for the lumber mill and their insurer. <http://thermoguy.com/wp-content/uploads/Electrical-Frequency-Problem-in-Lumber-Mill.pdf>

Pacemaker recipients are told to stay out of an EMF, the blanket coverage of areas including schools take the EMF to the recipients. <http://thermoguy.com/emf-pacemaker/>

WSDOH can look at the ridiculous science associated with a plastic head or body part and see the irrelevance to their objectives. Once your schools are compromised enough, there will be no occupancy and it will be enforced by fire and police. Putting over a million students in the EMF is electrocuting them slowly and that is qualified electrical language. The liability across the board including criminal liability will be excessive.

Qualifying the expenditure to hardwire schools can be substantiated as there are no other options. I look forward to any questions or challenges, this can NOT be dismissed.

I would advise contacting medical education administrator at the link where an open program can be discussed and questions can be answered in a recognized program.

Sincerely,

Curtis Bennett
Chief Science Officer
Interprovincial Journeyman Electrician(Red Seal)
Building Engineering Technologist
Adjunct Faculty for IHF & GEDI
Thermal Radiation Consultant for 35 Years/
www.thermoguy.com
curtis@thermoguy.com
Ph: 604-239-2694

"Bringing the Invisible to Light Since 1979"

105 (name withheld)

I do not want 5G to be "deployed" in New Zealand for the following reasons:

- New Zealanders already have good access to internet

- There are no long term safety studies for 5G. It is known that the 5G frequencies interfere with the oxygen molecule's take up into the cell. This has huge implications for the health of all New Zealanders.. With 5G "roll out" we will witness higher levels of disease as every cell in the body requires oxygen for the support of life!

-There will be a huge increase in unsightly cell towers - over double the current amount will be required. Cell towers already mar every view of the horizon we can see.

5G millimetre waves only travel 250 metres, so there will have to be new cell units installed every 250 metres across New Zealand. How could this possibly be seen as more efficient?

- There are already very high rates of cancer in New Zealand caused in part by microwave radiation. Cancer rates will escalate with the arrival of 5G.

Please do not bring this technology into New Zealand. It is not needed.

Please do not publish my name publicly with this submission.

106 Robin Kelly

To whom it may concern:

I have been a GP here for nearly 40 years and have thoroughly researched the 5G technology. It would seem that the industry seems blind to the concerns of highly trained academic scientists and physicians. The adverse effects will likely be most dangerous for young children, unborn babies, and those already unwell. Some harmful effects may develop slowly and insidiously.

The approach must be 'primum non nocere' - first do no harm.

5G must be thoroughly studied for potential harmful effects on living systems before being launched in New Zealand. Results must be presented in an accessible form to the public, who must then have their say.

This indicates the great concern from scientists and physicians internationally.

<https://www.saferemr.com/2017/09/5G-moratorium12.html>

Yours sincerely

Dr Robin Kelly MRCS, LRCP, FRNZCGP.
Vocationally Registered General Practitioner

112 Anthony Opie

Submission: Preparing for 5G in NZ

In NZ we already have adequate access to the internet and moving to a 5G system would entail increased exposure to wireless radiation for most new Zealanders.

In the early stages there would a doubling of cellphone stations within urban areas and the next stage would be followed by many small cell units evidently to overcome the fact that 5G transmissions are obstructed by buildings and even rain.

These smaller units could possibly be placed every 250 metres in urban locations. This would be hazardous given the amount of radiation people would be exposed to.

The link below leads to a warning of serious health problems from the effects of 5G.

I would ask that the installation of 5G should not take place as the health risks are too great.

Anthony Opie

<https://ehtrust.org/wp-content/uploads/Scientist-5G-appeal-2017.pdf>

118 Andrew Pert

TO whom it may concern.

I am alarmed by this proposal and wish to object in the strongest terms.

The headlong rush to adopt 'new technology' does not serve the public interest well at all:

although I'm sure that commerce will always come up with 'compelling' reasons:
while we the rate and tax payers are dragged into paying for far more 'sophistication'

than we need, for such a small population:

and once established would be put to far more use than what is desirable.

The present systems are not being used to full advantage, and indeed are not living up to the promises:

and it appears to me that this clutching at ever more 'advanced technology' serves to divert attention away from this.

With the present system I have 3 cell site visible and upstairs could connect up with 6-10 networks:

while often I am unable to sleep until I turn the wifi off for the night:

and when others turn it back on for several nights in a row I find my right eyelid twitching,

and have the constant feeling of the beginnings of a headache - which I rarely have otherwise.

To increase the coverage as planned with this new network could make my life here unbearable:

and if, as pointed out above more and more uses were found to justify the expense of setting this system up,

then I imagine that there will be nowhere left in New Zealand I could go for relief from such effects.

Please think again and approach with extreme caution

rather than with this enthusiasm that we may all well live - or not - to regret.

Tricia Cheel

119 Nicky Jones

My name is Martin Harris

Here is my submission regarding 5G preparations for NZ.

Please consider the following concerns:

The NESTF is the “National Environmental Standard for Telecommunications Facilities”.

Under this standard the allowable emissions limit for 5G infrastructure using millimetre waves (or any frequency in excess of 2 GHz to 300 GHz) is 10 million microwatts per square metre (10 w/m²).

New Zealand’s standard for devices that produce RFR in the microwave range is already one of the poorest in the world. In NZ the legal limit for exposures to this type of radiation under NZS2772.1:1999 is much higher than in many other countries. (For example, in China, Italy, Russia and Switzerland, the limit is 10 times lower at 1 w/m².)

NZ has high legal exposure levels despite the fact that RFR in the microwave range is classified as a possible carcinogen (type 2B) by the World Health Organisation’s International Agency for Research on Cancer (IARC) and despite the fact that NZ has a high cancer rate.

If NZ’s already lax limits for exposure to RFR in the microwave range are revised upwards because the system proposed for 5G would be likely to exceed the current limit, this could have negative impacts on human health.

<https://www.rsm.govt.nz/projects-auctions/current-projects/preparing-for-5g-in-new-zealand-technical-consultation/5g-spectrum-road-map-discussion-document.pdf/view>

According to the link above, these frequencies cannot travel more than 250 metres which means that areas where 5G uses millimetre wave frequencies will need to have millimetre wave transmitters every 250 metres or less.

one million internet connections per square kilometre is ludicrous for a country that has only about 4.5 million people and a low population density.

Quoting from the discussion document: “New Zealand has sufficient spectrum available for 5G to support the roll out of at least three national networks. All cellular mobile network operators have indicated their desire to build their own 5G network and compete at the infrastructure level. Given this, there would have to be strong public policy reasons to prevent this occurring.”

· One of the frequencies being considered as part of the 5G system (1400MHz) is already being used by the NZ Police, Chorus and the Airways Corporation.

Can you imagine the expense to the taxpayer of having to replace all NZ police personal radios and vehicular radio etc. systems?

According to the discussion document NZ has NO safety standards for the cellular phones on

the market (but allows the importation of any cellular phone that is compliant with any other countries' regulations) shows a worrying lack of concern for New Zealanders' health.

The Spectrum NZ discussion document does NOT suggest that NZ should do its own pre-market testing of cellular phones that are designed to be compatible with the 5G system.

There are already modems in development that are designed to be used in situations where there is both 4G coverage and millimetre wave coverage.)

Cellular phones that are 4G and 5G compatible would therefore potentially expose users to potentially carcinogenic RFR microwave radiation from the 4G system PLUS millimetre waves.

Based on the short wave length of millimeter waves, the main health concerns at this stage – further research is desirable – appear to be potential adverse effects on the skin and the eyes.

The NZ government should commission safety testing of 5G compatible modems and smart phones and other devices prior to their being marketed in NZ.

It would be better for people's health to have only one 5G network rather than three (if Spark, Vodafone and 2 Degrees all decide to build their own 5G networks).

It is foolish to expose New Zealanders to the health risks of additional wireless infrastructure to facilitate appliances such as domestic fridge talking a smart meter!

A doubling of the number of cellphone towers in residential areas is concerning from a health perspective given the apparent lack of certainly or independent objective research and lack of pre market testing of 5G compatible devices.

NZ should wait to see what health impacts 5G infrastructure and 5G compatible devices may have in other countries where this technology is adopted prior to rushing into adopting what is essential a technology of (at this stage) unproven safety?

Regards

Martin Harris

125 Carolyn McKenzie

We humans are very good at running before walking and this is demonstrated very well in the communications technology.

There are unintended consequences for almost every step we take so we must evaluate very carefully, how much risk we

are willing to take. I put it to you that technology that can untangle our DNA is far too great a

risk! We need the precautionary principle to be applied.....DON'T DO THE 5G.

C McKenzie

126 Eve Berry

Dear Sir or Madam

Please except this email as my confirmed opposition to the introduction of 5G into New Zealand. I believe that the 5G milliwaves are dangerous to human, and animal health. I do not believe that we should be subjecting our delicate biosphere to known harmful effects such as this.

Thanking for considering my perspective.

Yours faithfully
Eve Berry.

128 Daphne Miller

To whom it may concern,

I am very concerned about the likelihood of expanding the 5G wireless energy system. The whole "Smart" grid that we are being forced to live in.

These microwaves of unseen energy have not been independently scientifically tested for the many years we are likely to be exposed on such an exponential scale.

Constant radiation even at low levels is extremely damaging to the cells of life.

If it goes ahead the risks to the environment and all living things will not be in harmony with good health and a contented natural habitat. It will not be possible to live in this state continually, which seems to be where it is heading.

I strongly believe scientists and those who fund them are being controlling, very power hungry and short sighted if they cannot see the dangers ahead.

There is a logical conclusion to all this and it is not where we should be going. Let's be mindful and considerate to generations who follow us.

ALL LIFE IS PRECIOUS.

Daphne Miller

130 Penelope Clifford

Submission:

5G is totally unnecessary – a technology of unproven safety. It is foolish to expose New Zealanders to health risks of additional wireless infrastructure. Copper based landlines already provide adequate internet access. I oppose any increase to public exposure limits to RFR in the microwave range.

There are no safety standards in New Zealand for cellular phones.

No pre market safety testing of cellular phones prior to their being introduced to the market. The introduction of 5G could potentially expose users to potentially carcinogenic RFR microwave radiation.

The New Zealand Government should consider safety testing of 5G capable modems and smart phones and other devices prior to marketing and this data should be publically available.

Penelope Clifford

132 Sarah Hornibrooke

Sarah Hornibrooke 29.4.2018

I oppose the implementation of a 5G Wireless network in New Zealand.

I support transparent research into the 5g network done by independent professionals.

I WILL SPEAK TO MY SUBMISSION

Sarah Hornibrooke 29.4.2018 ¶

I oppose the implementation of a 5G Wireless network in New Zealand. ¶

I support transparent research into the 5g network done by independent professionals. ¶

<http://www.mfe.govt.nz/publications/towns-and-cities/new-zealand-urban-design-protocol/vision-and-mission-statement> ¶

Mission statement ¶

The *New Zealand Urban Design Protocol* calls for a significant step up in the quality of urban design in New Zealand and a change in the way we think about our towns and cities. As part of a co-ordinated programme of sustainable development, it aims to ensure New Zealand's towns and cities are successful places for people. ¶

<https://www.msd.govt.nz/about-msd-and-our-work/about-msd/our-vision-values-and-purpose.html> ¶

Our Purpose and principles ¶

People are at the centre of our business. This is reflected in our purpose and principles. ¶

Our purpose ¶

We help New Zealanders to help themselves to be safe, strong and independent. ¶

Ko ta mātou he whakamana tangata kia tū haumanu, kia tū kaha, kia tū motuhake. ¶

Our principles ¶

How we work ¶

MSD People: ¶

- → All own what we all do ¶
 - → Take responsibility for what we do ¶
 - → Understand our role in the big picture, who can help us and who we can help ¶
 - → Navigate through ambiguity and the opportunity it brings to create better ways of doing things ¶
 - → Act with integrity, courage and transparency, and ¶
 - → Celebrate our achievements and those of our clients. ¶
-

Our Government makes it quite clear in the Ministry for the Environment Mission Statement and the Purpose and Principles from the Ministry of Social Development that People are at the core of their business. Sustainability of health and safety of our people is paramount.

The Ministry of Business, Innovation and Employment (MBIE) is the government's lead business-facing agency. Our purpose is to grow the New Zealand economy to provide a better standard of living for all New Zealanders.

It is business that is leading the push to employ 5G and in its own words has no idea of the immediate risks, has not tested for effects on us or the environment, and is over-joyed at the amount of money to be made. The companies that sell us WIFI will not and do not enter into transparent independent testing, and cannot by reason be held to be the industries watch-dog on safe levels of exposure to Electro-Magnetic frequencies.

JUNE 20, 2016

Wireless Technology Innovations Federal Communications Chair Tom Wheeler was the keynote speaker at a National Press Club luncheon. He talked about the importance of the U.S. continuing to be a leader in wireless communication through the development of 5G, the next standard in cellular networks. He stressed the need for the private sector to lead in the development saying "technology should drive the policy." After his prepared remarks, he responded to written questions from audience members.

<https://www.c-span.org/video/?411277-1/fcc-chair-tom-wheeler-delivers-remarks-5g-networks>

Edited version https://www.youtube.com/watch?time_continue=227&v=P5AYRWvjVg

¶

I do feel the effects of EMF frequency. I have tested the devices in my home with an [acoustimeter](http://www.emfieldsolutions.com/detectors/acoustimeter.asp), and eliminated their broadcast using Ethernet cables and replacing the hand-held phone with a copper wire connected one. Now my digestion is settled and there are no more sores on my left (phone held) ear. We have retained, and replaced with like, analogue meters. <http://www.emfieldsolutions.com/detectors/acoustimeter.asp>

We have friends who find it joy to be here because of the **EMF silence**. As they say "Silence is Golden".

Our property could be adversely affected by **5G polluting** that, which would impact on its **financial value**.

¶

There are increasing numbers of people becoming aware of their sensitivity to EMF, as we employ more of this technology our **environment is more saturated** making our lives painful. Multitudes of Independent studies being endorsed by other countries are giving reason to curtail further WIFI developments and have begun to **remove it from day care and schools**. Smart meters are being replaced with analogue again.¶

<http://www.wifi-in-schools-australia.org/p/worldwide.html>¶

We have our own documentation in the form of microscopy and Metered readings of the effects of EMF on a family member who **developed cancer**. These were coincidentally recognizable as being filmed and described in the Award-Winning Documentary, **TAKE BACK YOUR POWER**. <https://www.youtube.com/watch?v=2uMfx-FsJiE> ¶

The installation of **5G will also impact on trees** and shrubs across all environments, as they impede the efficiency of 5G overseas there has risen cause to remove them by the thousands. ¶¶

I refer you to this fact sheet for further information. <https://www.telecompowergrab.org/fact-sheet.html>¶

¶

¶

137 Zoe Drayton

To Whom It May Concern

After reading this article

<<https://www.thenation.com/article/how-big-wireless-made-us-think-that-cell-phones-are-safe-a-special-investigation/>> <https://www.thenation.com/article/how-big-wireless-made-us-think-that-cell-phones-are-safe-a-special-investigation/>

I am very concerned about the proposal to roll out 5G in NZ.

To quote directly from the article:

“... will require augmenting today’s 4G technology with 5G, thus “massively increasing” the general population’s exposure to radiation, according to a petition signed by 236 scientists worldwide <<https://drive.google.com/file/d/0B14R6QNkmaXuelFrNWRQcThNV0U/view>> who have published more than 2,000 peer-reviewed studies and represent “a significant portion of the credentialed scientists in the radiation research field,” according to Joel Moskowitz, the director of the Center for Family and Community Health at the University of California, Berkeley, who helped circulate the petition. Nevertheless, like cell phones, 5G technology is on the verge of being introduced without pre-market safety testing.

Lack of definitive proof that a technology is harmful does not mean the technology is safe, yet the wireless industry has succeeded in selling this logical fallacy to the world. In truth, the safety of wireless technology has been an unsettled question since the industry’s earliest days. The upshot is that, over the past 30 years, billions of people around the world have been subjected to a massive public-health experiment: Use a cell phone today, find out later if it causes cancer or genetic damage. Meanwhile, the wireless industry has obstructed a full and fair understanding of the current science, aided by government agencies that have

prioritized commercial interests over human health and news organizations that have failed to inform the public about what the scientific community really thinks. In other words, this public-health experiment has been conducted without the informed consent of its subjects, even as the industry keeps its thumb on the scale."

The petition mentioned above "recommend[s] a moratorium on the roll-out of [5G]...until potential hazards for human health and the environment have been fully investigated by scientists independent from industry."

I completely agree with this and therefore would ask that this happens in NZ as part of the investigation into the viability of 5G both in health and need before any decisions are made
Sincerely

Zoe Drayton

139 Ryan le Roux

To whom to may concern:

I wish to voice my opinion and ask that New Zealand does not implement 5G. I feel that there is already a huge question over the safety of mobile phone use as well as network towers broadcasting radio frequencies.

I believe there are still countless tests that need to be done over a period of time to prove the safety before installation of any new towers or systems such as 5G. From research I have done, it seems that 4G and 5G compatible devices could potentially expose users to carcinogenic RFR microwave radiation from the 4G system as well as millimetre waves from the 5G.

The NZ government should commission safety testing of 5G compatible modems and other devices prior to them being marketed or sold in NZ. The people of New Zealand should be better informed and all the test data for 5G compatible phones should be published on a publicly accessible website.

Thank your for your time

140 Zachary Domike

I do not want 5g radiation allowed in NZ. The government's support of additional overlapping wireless infrastructure will stimulate massive investment - which will all be paid

by NZ consumers, eventually.

The health effects of wireless and cellular mobile networks has been only partially studied. Health effects of mobile phones may be responsible for creating an inexplicable tidal wave of cancers and eye problems.

Signed,
Zachary Domike

143 Daryl Silcock

PLEASE DO NOT DO THIS!!

I have an EMF sensitivity - I already suffer from over exposure to wireless signals and this will only increase them multiple times.

I cannot take much more - my brother has to live out in the wops away from any signals as they make him really ill - it is so unfair you inflict this on EVERYONE when you know the risks - its not necessary!!

Daryl Silcock.

147 Rose Wiley

I am totally against 5g in NZ - or anywhere in the world. The 4g system has already overloaded us with EMF's - NO MORE PLEASE!!

We do not need any more cancer than we already have - there is so much research and information out there about EMF's it leaves one questioning why such an overwhelming amount of evidence is being ignored..?

Rose Wiley.

151 Chad Russell

Hi

Please reconsider your decision to implement the 5G network across NZ.

My primary reason for this is that we have no idea what this new frequency range will do the human body. I am a father and I very much care about the health of my children and all the other younger generations to come. This is being rolled out across the US and the UK with no further testing for long-term human health. I can tell you that this will be detrimental to animal, bee and human health. We already have a reliable 4G and copper network. This rollout will mean a lot more cell phone towers in urban areas which is just not acceptable!!!

Please take this decision very seriously. For the future of our children's health. I urge you to think about this decision not with economics in mind but with the health of all the living creatures in this great country.

I am sure that you are looking at this decision from all angles and that you are aware of the health consequences of such a roll out..

Many thanks

Chad Russell

Submission: Preparing for 5-G in New Zealand

Anne Gastinger:

I wish to state my concerns about the proposed deployment of 5G in New Zealand

I suffer from a health condition known as Electro hypersensitivity. Exposure to radio frequency radiation especially makes me ill. With the increasing proliferation of wireless technologies emitting these frequencies in our society, my life has become more and more constrained, and my health increasingly compromised. Already our environment is so saturated by WiFi, it is almost unavoidable. Prof. Belpomme in his address below estimates between 3 – 10 % of society in the western world now suffer this disease. The medical community here in New Zealand has limited awareness of this condition, meaning sufferers are often misdiagnosed and unrecognised. This means we need to rely on International experts estimates which predict 3-10% of New Zealand's population will be immediately impacted negatively by the mandatory roll out of 5G in their neighbourhoods. Unfortunately, we do not know at this stage, as there has been no research undertaken to assess whether this will cause increasing numbers of people to develop electro-hypersensitivity, a condition Prof. Belpomme likens to a pre Alzheimer State, which is indeed serious! Scientific research has also found typical, everyday exposures to radio frequency to be linked to such serious diseases as cancer, neurological diseases and cardiovascular disease. It is irresponsible and unethical that this government would be allowing roll out this technology without independent non industry connected research and investigation being first undertaken to both assess its risk to public health and formulate safer means of delivery of the type of data industry wants to deliver.

Please view world leading expert, Professor Belpomme's recent address on this condition

<http://www.emfsa.co.za/ehs/prof-dominique-belpomme-diagnosing-treating-preventing-electromagnetic-field-impact-adults-children/>

Also New Zealand, Dr. Mary Redmayne (research fellow at Victoria University, Wellington and Monash University, Melbourne address at the World Congress on Public Health in Melbourne 2017 on electro-hypersensitivity

<https://wcp2017.paperlessevents.com.au/view-poster/P064>

Please do not introduce a technology that requires even more cell towers into our community. This means even more families and households will live in close proximity to these sources of radio frequency, without being given the chance to opt out, their homes being exposed 24/7!

The most vulnerable groups are pregnant women, children, the elderly and infirm – all generally are in no fit position to be able or afford to move to another safer location! A safe home away from the emissions of this type of environmental toxin is a basic human right!

The World Health Organisation acknowledges that Radio Frequency is a possible Class 2b carcinogen.

As of January, 2018 over 200 doctors and scientists have signed an appeal against the roll out of 5G based on their grave health and safety concerns about its potentially negative effect on public health. Follow the link: <http://www.5gappeal.eu/scientists-and-doctors-warn-of-potential-serious-health-effects-of-5g/>

The fact different countries around the world have chosen not to implement the RFR standards of those of International Committee for Non Ionising Radiation Protection which New Zealand uses, preferring safer more conservative levels is again cause for concern. In New Zealand the legal limit

for exposures to this type of radiation under New Zealand S2772.1:1999 is much higher than in many other countries. (For example, in China, Italy, Russia and Switzerland, the limit is 10 times lower at 1 w/m2.)

New Zealand has high legal exposure levels despite the fact that RFR in the microwave range is classified as a possible carcinogen (type 2B) by the World' Health Organisation's International Agency for Research on Cancer (IARC) and despite the fact that New Zealand has a high cancer rate.

If New Zealand's already lax limits for exposure to RFR in the microwave range are revised upwards because the system proposed for 5G would be likely to exceed the current limit, this could have negative impact on human health.

I oppose any increase to the allowable public exposure limit for RFR in the microwave range because this a risk to public health.

We have adequate internet access here in New Zealand. 5G is an utterly unnecessary risk to public health and certainly cannot be justified given the potential for huge human and possibly environmental suffering – there is clear scientific evidence documenting the adverse biological impact of man made radio frequency emissions on different species of animal and plant life.

Unfortunately I like other people who suffer from electro-hypersensitivity cannot talk to this submission because our health condition means we cannot tolerate a Wifi-ed environment for any extended period of time without becoming ill. Though we currently have no lobby, our voices still matter, and our experiences testify to the harm radio frequency is causing.

Anne Gastinger

159 Lochlan Wiley

I am against having 5g anywhere in the world.

My entire family suffer from EMF sensitivities - to the point where some mobile phones burn my Mum's hands and the EMF's burn her skin so much and make it so itchy she draws blood from being forced to scratch it - please dont make things any worse for us!!

NO MORE EMF'S please!!!!

Loki Wiley

165 Heath Bowman

Preparing for 5G in New Zealand
30th April 2018

I am writing to submit my opposition to the introduction of 5G infrastructure and networks in NZ.

Initially it appears that the current network of cell towers will be increased dramatically to form a control layer for the upcoming proposed 5G roll out. This concerns me for two reasons, documented negative health effects in proximity to cell towers and potential impact on property values as the public become aware of these effects. Putting aside the fact that these towers are ugly, as the effects of microwave radiation become prominent, people will not want to purchase property in close proximity to these towers.

Secondary roll out appears to then use "millimetre wave" technology which requires transmitters every 250m in urban areas due to the short transmission distances of these waves. These transmitters will no longer be large like the current cell towers and so become a far more insidious impact on public health. It is also concerning that RSM is seeking feedback on whether the proposed antennae will comply with the NESTF. NZ already has a much higher standard than other countries (10 times higher) and it would be of huge concern if these standards were to be breached.

It is concerning that NZ would consider the implementation of a 5G network (perhaps multiple ones!) without first considering the health impacts of other implementations worldwide. This is technology with no proven level of safety, in fact any current exposure limits are 20+ years old and only consider thermal impacts of exposure while ignoring biological (non-linear system) impacts to human mitochondria and DNA. Other countries have made steps to minimise exposure in some instances (France's ban of wifi in nursery schools) but without any real safety data we are playing with fire by introducing a nationwide network of microwave radiation over and above the current wireless network. And all so that our fridge can talk to our toaster. It is ridiculous to expose the population to such risks and we will pay for this in rising 'unexplained' medical issues which will far outweigh any benefits.

I ask that the proposed implementation in NZ be delayed until concrete safety data is obtained and that these wireless networks are proven safe with no biological effects. In the meantime, NZ needs to provide exposure measurements and data to all those living near current towers, consultation prior to installation of new towers, and act to reduce wireless exposure in infants, young children and all those with an unmyelinated brain. The risk is too great to ignore.

Heath Bowman

180 Kuniko Koyama

Preparing for 5G in NZ

5G is the highly touted next generation of wireless communications that is designed to give faster download speeds that what is possible with the 4G network currently available in much of NZ.

Unfortunately, moving to a 5G system would entail increased exposure to wireless radiation for most New Zealanders.

In fact, the initial stage of the 5G system proposed for NZ would involve a doubling of cellular phone base stations in urban areas of NZ, doubling of cell phone towers in my town or closest town/city is something that would concern me from a health perspective, because me and my teenage daughter are electrosensitive and also because of the research showing increased cancer rates in people living close to cellular infrastructure.

New Zealand's standard for devices that produce RFR in the microwave range is already one of the poorest in the world. In NZ the legal limit for exposures to this type of radiation under NZS2772.1:1999 is much higher than in many other countries. (For example, in China, Italy, Russia and Switzerland, the limit is 10 times lower at 1 w/m².)

NZ has high legal exposure levels despite the fact that RFR in the microwave range is classified as a possible carcinogen (type 2B) by the World' Health Organisation's International Agency for Research on Cancer (IARC) and despite the fact that NZ has a high cancer rate.

If NZ's already lax limits for exposure to RFR in the microwave range are revised upwards because the system proposed for 5G would be likely to exceed the current limit, this could have negative impacts on human health.

Therefore the cost (to individuals, families and society) of loss of productivity due to illness and treating potential adverse health effects caused by greater utilisation of wireless technologies could end up outweighing any economic benefits of 5G

With all these reasons above, I would oppose strongly any increase to the allowable public exposure limit for RFR in the microwave range and would like the government consider people's health over convenience.

Best regards,

Kuniko Koyama
Kuniko Koyama

190 John Berry

I would like to have looked into this subject longer, as I am sure if i did so I would have even more serious concerns over 5G, but here is what I have found as reasons to avoid this spectrum from looking just this morning, the last chance i have to make a submission.

Firstly the frequencies involved, and the nature of the radiation (pulsed) is a concern as biological systems resonate at such frequencies and even communicate at such frequencies. The added problem is that to really do this subject justice a wide range of disciplines are needed.

But when money and power is on one side, some compromised science is sure to follow. Despite that, please see that scientists want a moratorium on 5G in Europe;
<https://www.saferemr.com/2017/09/5G-moratorium12.html>

5G seems to be of very little use to me, the frequencies in question are strongly absorbed by

water, so rain, and maybe even fog will make it useless, it does not penetrate structures well, and is defeated by plants.

This means it will really not be useable even when rolled out except to pretty much unobscured line of sight to the transmitter, and i have heard they want them EVERYWHERE for that reason.

but this just increases the risk, but still when it rains, or indoors it won't work, so it is going to be use primarily to those who are outside and maybe even facing in the right direction. What a limited technology.

We already have Bluetooth, Wifi, Wimax and various other means of sharing high speed communications as well as the previous and 3G and 4G. And fibre or VDSL for those not on the run. In addition, anyone could install a "LiFi" bulb, that is an LED bulb that uses modulation of visible light, this will concern people a lot less and can reach 224 Gigabits!

And visible light is not absorbed so reality by biological systems and water.

See this list of concerns: <https://www.electricsense.com/12399/5g-radiation-dangers/>

They have 11 concerns which should be considered a part of this submission and will be pasted below. but it includes these quotes:

“The new 5G wireless technology involves millimeter waves (extremely high frequencies) producing photons of much greater energy than even 4G and WiFi. Allowing this technology to be used without proving its safety is reckless in the extreme, as the millimeter waves are known to have a profound effect on all parts of the human body.”

-Prof. Trevor Marshall, Director Autoimmunity Research Foundation, California

“The plans to beam highly penetrative 5G milliwave radiation at us from space must surely be one of the greatest follies ever conceived of by mankind. There will be nowhere safe to live.”

-Olga Sheean former WHO employee and author of ‘No Safe Place’

“It would irradiate everyone, including the most vulnerable to harm from radiofrequency radiation: pregnant women, unborn children, young children, teenagers, men of reproductive age, the elderly, the disabled, and the chronically ill.”

—Ronald Powell, PhD, Letter to FCC on 5G expansion

This is in addition to the more than 200 scientists and doctors from 38 nations have signed the declaration calling for a moratorium on the deployment of 5G (fifth generation) cellular technology.

Clearly a lot of intelligent people are concerned about 5G, and yet it's benefits are rather limited, we area already very well connected now days!

Let's wait, or at most have a very limited area where 5G can be used so that we can learn from these trial locations just how much risk there is of detrimental effects.

A worst case scenario from 5G is apocalyptic, and the best case is slightly improve highspeed access from mobile devices that is mostly redundant and only effective under ideal conditions with line of sight or near line of sight as the radiation can't get through much of anything.

Here is the rest of that cited webpage:

MIMO Miniature Cell Towers

Current 4G cell towers have about a dozen or so antenna ports to support all communication, the new, smaller 5G cell towers (or bases) will be MIMO (Multiple Input Multiple Output) and carry about a hundred ports. These towers will probably be about 4 feet tall as opposed to the usual 90 feet towers currently erected around us. Cells will be available within a 100 meter range and these smart antennas will be able to differentiate between various mixed-up signals – like radio waves and WiFi signals – in the air and beam them back in an orderly fashion so to speak.

Low Latency – High Efficiency

5G will break down data and send it in smaller sizes to offer significantly reduced transmission times. Data will be sent with only a 1 millisecond delay instead of a 50 millisecond delay commonly found with 4G. With communication this fast, it'll allow machines to talk to each other with practically no room for error. As Marcus Weldon the CTO of Alcatel Lucent comments, “up until now, we’ve designed the networks for people and their needs, and now we’re designing it for things.”

The Dangers Of 5G – 11 Reasons To Be Concerned

The USA is currently leading the way on 5G. At the June 2016 press conference where the Federal Communications Commission’s (FCC) head Tom Wheeler announced the opening up of low, mid and high spectrum’s. There was no mention of health effects whatsoever. But the dangers are real.

5G Radiation Dangers <<https://www.electricsense.com/wp-content/uploads/2017/05/emf-5G-Radiation-Dangers-300x300.png>> Thousands of studies link low-level wireless radio frequency radiation exposures to a long list of adverse biological effects, including:

- * DNA single and double strand breaks
- * oxidative damage
- * disruption of cell metabolism
- * increased blood brain barrier permeability

<<https://www.electricsense.com/2597/cell-phone-radiation-studies%e2%80%93is-this-as-much-truth-as-you-can-fit-on-one-page/>>

- * melatonin reduction
- * disruption to brain glucose metabolism

* generation of stress proteins

Let's not also forget that in 2011 the World Health Organization <<https://www.electricsense.com/1993/so-cell-phones-are-possibly-carcinogenic-really/>> (WHO) classified radio frequency radiation as a possible 2B carcinogen.

More recently the \$25 million National Toxicology Program concluded that radio frequency radiation of the type currently used by cell phones can cause cancer <<https://www.electricsense.com/8822/cell-phones-cause-cancer-fact/>> .

But where does 5G fit into all this? Given that 5G is set to utilize frequencies above and below existing frequency bands 5G sits in the middle of all this. But the tendency (it varies from country to country) is for 5G to utilize the higher frequency bands. Which brings it's own particular concerns. Here is my review of the studies done to date – 11 reasons to be concerned.

#1 – A DENSER SOUP OF ELECTROSMOG

We're going to be bombarded by really high frequencies at low, short-range intensities creating a yet more complicated denser soup of electrosmog – as this diagram shows.

<<https://www.electricsense.com/wp-content/uploads/2017/05/emf-5G-Frequencies.jpg>>

Source: Latest on 5G Spectrum – EMFields Ltd.

To work with the higher range MMW in 5G, the antennas required are smaller. Some experts are talking about as small as 3mm by 3mm. The low intensity is for efficiency and to deal with signal disruption from natural and man-made obstacles.

#2 – EFFECTS ON THE SKIN

The biggest concern is how these new wavelengths will affect the skin. The human body has between two million to four million sweat ducts. Dr. Ben-Ishai of Hebrew University, Israel explains that our sweat ducts act like "an array of helical antennas when exposed to these wavelengths," meaning that we become more conductive. A recent New York study which experimented with 60GHz waves stated that "the analyses of penetration depth show that more than 90% of the transmitted power is absorbed in the epidermis and dermis layer."

The effects of MMWs as studied by Dr. Yael Stein <<https://ehtrust.org/letter-fcc-dr-yael-stein-md-opposition-5g-spectrum-frontiers/>> of Hebrew University is said to also cause humans physical pain as our nociceptors flare up in recognition of the wave as a damaging stimuli. So we're looking at possibilities of many skin diseases and cancer as well as physical pain to our skin.

#3 – EFFECTS ON THE EYES

A 1994 study found that low level millimeter microwave radiation produced lens opacity in rats, which is linked to the production of cataracts.

An experiment conducted by the Medical Research Institute of Kanazawa Medical University found that 60GHz “millimeter-wave antennas can cause thermal injuries of varying types of levels. The thermal effects induced by millimeterwaves can apparently penetrate below the surface of the eye.”

A 2003 Chinese study has also found damage to the lens epithelial cells of rabbits after 8 hours of exposure to microwave radiation and a 2009 study conducted by the College of Physicians and Surgeons in Pakistan conclude that EMFs emitted by a mobile phone cause derangement of chicken embryo retinal differentiation.

#4 – EFFECTS ON THE HEART

A 1992 Russian study found that frequencies in the range 53-78GHz (that which 5G proposes to use) impacted the heart rate variability (an indicator of stress) in rats. Another Russian study on frogs who’s skin was exposed to MMWs found heart rate changes (arrhythmias).

#5 – IMMUNE SYSTEM EFFECTS

A 2002 Russian study examined the effects of 42HGz microwave radiation exposure on the blood of healthy mice. It was concluded that “the whole-body exposure of healthy mice to low-intensity EHF EMR has a profound effect on the indices of nonspecific immunity”.

#6 – EFFECTS ON CELL GROWTH RATES

A 2016 Armenian study observed MMWs at low intensity, mirroring the future environment brought about by 5G. Their study conducted on E-coli and other bacteria stated that the waves had depressed their growth as well as “changing properties and activity” of the cells. The concern is that it would do the same to human cells.

#7 – EFFECTS ON BACTERIA RESISTANCE

The very same Armenian study also suggested that MMWs effects are mainly on water, cell plasma membrane and genome too. They had found that MMW’s interaction with bacteria altered their sensitivity to “different biologically active chemicals, including antibiotics.” More specifically, the combination of MMW and antibiotics showed that it may be leading to antibiotic resistance in bacteria.

This groundbreaking finding could have a magnum effect on the health of human beings as the bandwidth is rolled out nationwide. The concern is that we develop a lower resistance to

bacteria as our cells become more vulnerable – and we become more vulnerable.

#8 – EFFECTS ON PLANT HEALTH

One of the features of 5G is that the MMW is particularly susceptible to being absorbed by plants and rain. Humans and animals alike consume plants as a food source. The effects MMW has on plants could leave us with food that's not safe to consume.

Think GMOs on steroids. The water that falls from the sky onto these plants will also be irradiated. A 2010 study on aspen seedlings showed that the exposure to radio frequencies led to the leaves showing necrosis symptoms.

5g radiation effect on plants <<https://www.electricsense.com/wp-content/uploads/2017/05/emf-5G-Radiation-Leaves-necrosis-300x277.jpg>>

Source: <https://www.hindawi.com/journals/ijfr/2010/83627>

Another Armenian study <<http://www.ijsrpub.com/uploads/papers/IJSRES/IJSRES-Sep2013/IJSRES-13-54.pdf>> found that MMWs of low intensity “invoke(s) peroxidase isoenzyme spectrum changes of wheat shoots.” Peroxidase is a stress protein existing in plants. Indications are that 5G will be particularly harmful to plants – perhaps more so than to humans.

#9 – EFFECTS ON THE ATMOSPHERE AND DEPLETION OF FOSSIL FUELS

Implementation of the 5G global wireless network requires the launching of rockets to deploy satellites for 5G. These satellites have a short lifespan which would require a lot more deployment than what we're currently seeing. A new type of hydrocarbon rocket engine expected to power a fleet of suborbital rockets would emit black carbon which “could cause potentially significant changes in the global atmospheric circulation and distributions of ozone and temperature” according to a 2010 Californian study <<http://onlinelibrary.wiley.com/doi/10.1029/2010GL044548/full>> . Solid state rocket exhaust contains chlorine which also destroys the ozone.

The effects on the ozone are thought to be worse than current day CFC exposure.

Google's Project Loon is said to bring Internet to rural and hard-to-access areas by using helium balloons. But these balloons only have a 10-month lifespan. We're looking at a lot of helium being used here, more than what we can possibly have on Earth?

#10 – DISRUPTION OF THE NATURAL ECOSYSTEM

Since the year 2000, there have been reports of birds abandoning their nests as well as health issues like “plumage deterioration, locomotion problems, reduced survivorship and death,” says researcher Alfonso Balmori. Bird species that are affected by these low levels,

non-ionizing microwave radiation are the House Sparrows, Rock Doves, White Storks, Collared Doves and Magpies, among others.

But it's not just the birds. The declining bee population is also said to be linked to this non-ionizing EMF radiation. It reduces the egg-laying abilities of the queen leading to a decline in colony strength.

A study conducted by Chennai's Loyola College in 2012 concluded that out of 919 research studies carried out on birds, plants, bees and other animals and humans, 593 of them showed impacts from RF-EMF radiations. 5G will be adding to the effects of this electrosmog.

#11 – MOST 5G STUDIES MIS-LEADING

5G will use pulsed millimeter waves to carry information. But as Dr. Joel Moskowitz points out, most 5G studies are misleading because they do not pulse the waves. This is important because research on microwaves already tells us how pulsed waves have more profound biological effects on our body compared to non-pulsed waves. Previous studies, for instance, show how pulse rates of the frequencies led to gene toxicity and DNA strand breaks.

LIVE TESTING ALREADY BEGUN

AT&T have announced the availability of their 5G Evolution in Austin, Texas. 5G Evolution allows Samsung S8 and S8 + users access to faster speeds. This is part of AT&T's plan to lay the 5G foundation while the standards are being finalized. This is expected to happen in late 2018. AT&T has eyes on 19 other metropolitan areas such as Chicago, Los Angeles, Boston, Atlanta, San Francisco and so on. Indianapolis is up next on their 5G trail due to arrive in the summer.

Charter, the second-largest cable operator in the US, has been approved for an experimental 28 GHz license in Los Angeles. The outdoor tests will use fixed transmitters with a 1 km or smaller effective radius.

Qualcomm has already demonstrated a 5G antenna system with about 27 decibel gain. According to ABI Research, is "about 10 to 12 more db than a typical cellular base station antenna." Not a good sign.

Many more private sector companies such as HTC, Oracle, Sprint, T-Mobile are playing a role in the developing of testing platforms by contributing time, knowledge or money.

In the UK the 3.4GHz band has been earmarked for 5G use with contracts awarded to O2, Vodaphone, EE and Three. While the 2.3GHz band, awarded to O2, is likely to be used for 5G too in time.

Call to Action

Research and pre-testing is rampant by companies who are interested to tap into the lucrative waters of 5G. But few are willing to research its effects on health. The International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines remain essentially unchanged since 1998, not allowing for the recognition of radio frequency microwave radiation and MMWs as harmful unless there is a heating effect. But a few experts are speaking out.

DariuszLeszczynski

<<https://betweenrockandhardplace.files.wordpress.com/2017/01/leszczynski-report-from-science-wireless-2016.pdf>> from the University of Helsinki and also former member of the International Agency Research on Cancer is one of them. He has brought to attention to ICNIRP intention to classify skin as limbs. Limbs are paid lesser attention to when classifying exposure levels. Research indicates that MMWs affect the skin and the eyes the most. If skin is classified as a limb, this will pave the way for industry giants to introduce even higher exposures and put more people at risk.

The Global Union Against Radiation Deployment from Space (GUARD) addressed a letter <<https://ecfsapi.fcc.gov/file/DOC-55dde23da8400000-A.pdf>> to the FCC in September of 2016, bringing to their attention the harm 5G will inflict. GUARD warned the FCC that 5G violates Article 3 of The UN Declaration of Human Rights which states that “everyone has the right to life, liberty and security of person.” The document is laden with research, information and global support.

To learn how to write, call or email the relevant agencies to protest against the 5G deployment go here [parentsfor safetechnology.org](http://www.parentsfor safetechnology.org)
<<http://www.parentsfor safetechnology.org/>>

Thanks,
John

192 Joe Nowak

PREPARING FOR 5G NETWORK IN NZ

SUBMISSION 5G Killgrid

It is difficult to understand why an energy directed weapon system should be routed into every home and business in the country.
in order to expedite
an
instant
response
from our electronic toys.

The U.S. Federal
Communication Chairman claiming there is no time for study and impediments would not be tolerated! Who runs this country the Ministry of Business, Innovation, and Bright Ideas or the U.S. F.C.C. Chairman
?

5G does not penetrate foliage. Do we then cut down all the trees to accommodate the system? What about the increasing difficulties animals are already having with their natural navigational system due to the existing communication technology? What sterilization effects will this exposure have on our children? Questions and more questions with no answers!

Only an idiot would buy into this insanity!

The next time the Ministry decides it needs to threaten the population with a multitude of health risks it may wish to properly notify the public that a plan for their extermination is taking place. Being informed an hour ago that submission close tomorrow hardly comes as a surprise. These are common tactics employed by agents of the Government under the guise of so-called "consultation".

Joseph S Nowak

193 Lyla Mayn

In the same manner as the Govt is trying to discontinue landlines without the public really having time to think about it or even hear about it, they are now already doing the same with regard to the introduction of 5G.

5G is more than just some upgrade on 4G. It's a very, very dangerous technology that will make a lot of people very ill, and will make vulnerable people even sicker, perhaps even killing many of them. This includes, of course, the infirm, the elderly and children. And also pregnant women.

For those who are sensitive to it, it will render large parts of our country uninhabitable for them.

I don't want to live in this environment. Have anyone ever thought of why there is more cancer and unexplained illnesses today than any other time?

I have a woman living with me that is sensitive to these frequencies and she's not the only one just in NZ, there's many more.

Please read links below

<https://ehtrust.org/wp-content/uploads/Scientist-5G-appeal-2017.pdf>

<http://www.greenmedinfo.com/blog/citizens-arms-against-5g-wireless-technology-roll-out-are-their-concerns-justified>

<https://www.telecompowergrab.org/fact-sheet.html>

Please stop this from happening

Thank you

Lyla Mayn

195 Jane Irving

Preparing for 5G in NZ

My name is Jane Irving and I am writing this submission for two reasons, one being personal and the other being concern for the people of New Zealand.

I am very concerned about the coming proposed roll out of 5G technology because of the potential health risks to NZ citizens. I understand that the roll out of 5G would mean a doubling of cell phone towers and this would cause a dramatic increase in microwave radiation in towns and cities. It cannot now be denied that this type of radiation is carcinogenic, but it is also responsible for a myriad of symptoms including headaches, fatigue, eyestrain, sleep disturbances, dizziness to name a few. It has been documented that microwave radiation also interferes with cell division in the human body. Other possible risks that have been published include memory loss, learning disabilities and ADHD. These effects are due to the fields of microwave radiation interacting with the body's nervous system, according to the Canadian Centre for Occupational Health and Safety.

I am one of those people who may be termed 'a canary in the coalmine'. I am already experiencing the effects of microwave radiation. I become very shaky, experience headaches, pain in the jaw and neck and feelings of disorientation when in contact with wifi, cellphones etc. and I cannot have these things in my house or my life. Because of this I know that the microwave radiation is harmful as I can feel it.

I understand that millimetre wave frequencies are being considered as part of a 5G system for NZ. Because these frequencies cannot travel more than 250 meters it will necessitate transmitters every 250 meters or less. That will mean a lot more exposure to the population. How long will the population be able to withstand this level of microwave radiation and remain healthy? Babies and children are even more at risk. I am deeply concerned about this. Please refer to this website for further information about the risks of 5G radiation: <https://ehtrust.org/wp-content/uploads/Scientist-5G-appeal-2017.pdf>

I am also concerned that New Zealand's standard for devices that produce RFR in the microwave range is already one of the poorest in the world. Our legal limit for exposures to this type of radiation is much higher than many other countries – in China, Italy and Russia the limit is 10 times lower. Surely this must be of concern to everyone, especially as RFR is classified as a possible carcinogen by the WHO.

Will these lax limits be revised upwards because the 5G system would be likely to exceed the current limit?

Does it not seem reasonable to suggest that NZ should do its own premarket testing of cellular phones that are designed to be compatible with the 5G system? Phones that are 4G

and 5G compatible could expose users to microwave radiation from the 4G system plus millimetre waves, increasing the potential harm in using a cellphone. Surely the NZ Government should commission safety testing of 5G compatible modems and smart phones and other devices prior to their being marketed in NZ?

Test data for 5G compatible phones should also be published on a publicly accessible website.

Finally I would like to point out that we already have in most areas of New Zealand an accessible internet service. Chorus was rolling out fibre optic, and now the focus seems to be on 5G. Fibre optic is safe and efficient and a much wiser way to go.

Most people already have a fast cellphone service available with the current 4G. Why would we put the health of our nation at risk by introducing a technology that has never been tested for its effect on human health, especially when people are already becoming or have become electrically sensitive.

201 Suzanna Campbell

Submission on the consideration of 5G Network system in NZ

Suzanne Campbell

I am very concerned about the potential to double the cellular phone towers to access 5G specifically due to living with a range of health conditions that include being EMF sensitive.

For those of use that are young, aged or have poor immune function adding more EMF exposure increases our risks to a range of extra health challenges our immune systems are unable to tolerate. We are already vulnerable to so many things that we are exposed to in an ever increasing time of many environmental toxins including EMF radiation. This needs to be taken seriously.

Research has shown increased cancer rates in people living close to cellular infrastructure.

According to the link below, 'millimetre wave' frequencies cannot travel more than 250 metres *which means that areas where 5G uses millimetre wave frequencies will need to have millimetre wave transmitters every 250 metres or less.*

http://www.massey.ac.nz/massey/about-massey/news/article.cfm?mnarticle_uid=2CDCB14D-CEE1-6959-5492-B63AD004AE6D

That a 5G system in NZ could eventually facilitate 1 million internet connections per square kilometre... The huge number of connections could be used to facilitate what has been called the Internet of Things (IoT) in which allows devices to communicate

with each other. (In his lecture in Auckland in 2013, Don Maisch PhD, an expert on standards for electromagnetic radiation described smart meters as a key component of the IoT – his lecture may be accessed via the following link: <http://www.stopsmartmeters.org.nz/uncategorized/dr-don-maisch-auckland-lecture-now-online/>)

If we do go ahead with a 5G network It would be better for people's health to have only one 5G network rather than three (if Spark, Vodafone and 2 Degrees all decide to build their own 5G networks).

There are currently no safety standards in NZ for cellular phones! According to the discussion document NZ has NO safety standards for the cellular phones on the market (but allows the importation of any cellular phone that is compliant with any other countries' regulations) shows a worrying lack of concern for New Zealanders' health.

It is especially worrying considering the research linking cellular phone use to brain tumours and the fact that according to the documentary "[Generations Zapped](#), there was NO pre-market safety testing of cellular phones prior to their introduction to the market.

The Spectrum NZ discussion document does NOT suggest that NZ should do its own pre-market testing of cellular phones that are designed to be compatible with the 5G system.

There are already modems in development that are designed to be used in situations where there is both 4G coverage and millimetre wave coverage.)

Cellular phones that are 4G and 5G compatible would therefore potentially expose users to potentially carcinogenic RFR microwave radiation from the 4G system PLUS millimetre waves.

Based on the short wave length of millimeter waves, the main health concerns at this stage – further research is desirable – are potential adverse effects on the skin and the eyes.

The NESTF is the "National Environmental Standard for Telecommunications Facilities" and under this standard the allowable emissions limit for 5G infrastructure using millimetre waves (or any frequency in excess of 2 GHz to 300 GHz it is 10 million microwatts per square metre (10w/m²).

New Zealand's standard for devices that produce RFR in the microwave range is already one of the poorest in the world. In NZ the legal limit for exposures to this type of radiation under NZS2772.1:1999 is much higher than in many other countries. (For example, in China, Italy, Russia and Switzerland, the limit is 10 times lower at 1 w/m²)

NZ has high legal exposure levels despite the fact that RFR in the microwave range is classified as a possible carcinogen (type 2B) by the World' Health Organisation's International Agency for Research on Cancer (IARC) and despite the fact that NZ has

a high cancer rate.

If NZ's already lax limits for exposure to RFR in the microwave range, this could have negative impacts on human health.

I believe that NZ should wait to see what health impacts 5G infrastructure and 5G compatible devices may have in other countries where this technology is adopted prior to rushing into adopting what is essentially a technology of (at this stage) unproven safety?

I believe that the cost (to individuals, families and society) of loss of productivity due to illness and treating potential adverse health effects caused by greater utilisation of wireless technologies could end up outweighing any economic benefits of 5G?

204 Kate and Rich Hlavac

To the decision makers within NZ government,

We are making our submission regarding the planned 5G network throughout New Zealand.

We understand that existing 4G cellular phone infrastructure is likely to be used initially as a "control layer" for a planned 5G network and that this is likely to mean a **doubling of cellular phone towers in urban areas of NZ**, and that frequencies described as "millimetre wave" frequencies are being considered as part of this 5G system for NZ.

According to the following link, http://www.massey.ac.nz/massey/about-massey/news/article.cfm?marticle_uuid=2CDCB14D-CEE1-6959-5492-B63AD004AE6D a 5G system in NZ could eventually facilitate **1 million internet connections per square kilometre**. We consider this to be ludicrous for a country that has only about 4.5 million people and a low population density.

We have read about research showing increased cancer rates in people living close to cellular infrastructure.

We are also concerned about the possible impact on property values in our area if more cellular phone towers are built.

We think that it is foolish to expose New Zealanders to the health risks of additional wireless infrastructure to facilitate appliances such as domestic fridges talking to a smart meter.

We quote the following from the discussion document discussion document: “New Zealand has sufficient spectrum available for 5G to support the roll out of at least three national networks. All cellular mobile network operators have indicated their desire to build their own 5G network and compete at the infrastructure level. Given this, there would have to be strong public policy reasons to prevent this occurring.” **We find this deeply worrying, as well as the fact that there are no safety standards in NZ for cellular phones!!!**

In fact, NZ has NO safety standards for the cellular phones on the market (but allows the importation of any cellular phone that is compliant with any other countries’ regulations) and this shows a worrying lack of concern for New Zealanders’ health.

We are aware of the research linking cellular phone use to **brain tumours** and the fact that according to the documentary [Generations Zapped](#), there was **NO pre-market safety testing of cellular phones prior to their introduction to the market.**

The Spectrum NZ discussion document does NOT suggest that NZ should do its own pre-market testing of cellular phones that are designed to be compatible with the 5G system. There are already modems in development that are designed to be used in situations where there is both 4G coverage and millimetre wave coverage.)

Cellular phones that are 4G and 5G compatible would therefore potentially expose users to potentially carcinogenic RFR microwave radiation from the 4G system PLUS millimetre waves.

Based on the short wave length of millimeter waves, the main health concerns at this stage – further research is desirable – appear to be potential adverse effects on the skin and the eyes.

We also think that the NZ government should commission safety testing of 5G compatible modems and smart phones and other devices prior to their being marketed in NZ and publish all the test data for 5G compatible phones data on a publicly accessible website.

We understand that Radio Spectrum Management is "seeking feedback on whether industry considers 5G antenna will comply with the National Environmental Standard for Telecommunications Facilities. Under this standard the allowable emissions limit for 5G infrastructure using millimetre waves (or any frequency in excess of 2 GHz to 300 GHz) is 10 million microwatts per square metre (10 w/m2).

New Zealand's standard for devices that produce RFR in the microwave range is already one of the poorest in the world. In NZ the legal limit for exposures to this type of radiation under NZS2772.1:1999 is much higher than in many other countries. (For example, in China, Italy, Russia and Switzerland, the limit is 10 times lower at 1 w/m2.)
NZ has high legal exposure levels despite the fact that RFR in the microwave range is classified as a possible carcinogen (type 2B) by the World' Health Organisation's International Agency for Research on Cancer (IARC) and despite the fact that NZ has a high cancer rate.

If NZ's already lax limits for exposure to RFR in the microwave range are revised upwards because the system proposed for 5G would be likely to exceed the current limit, this could have negative impacts on human health.

We strongly oppose any increase to the allowable public exposure limit for RFR in the microwave range.

Furthermore we believe that 5G is simply unnecessary because internet access in NZ is already acceptable in most areas, and that NZ should wait to see what health impacts 5G infrastructure and 5G compatible devices may have in other countries where this technology is adopted prior to rushing into adopting what is essentially a technology of (at this stage) unproven safety.

We predict that the cost (to individuals, families and society) of loss of productivity due to illness and treating potential adverse health effects caused by greater utilisation of wireless technologies could end up outweighing any economic benefits of 5G.

We oppose the implementation of 5G outright for all the reasons we have outlined above, and implore our decision-makers in government to exercise extreme caution in protection of the NZ population.

205 Andrew Cullen

Preparing for 5G in New Zealand

Submission from Andrew Cullen opposing the implementation of a 5G network in NZ.

Reasons for opposing the implementation of a 5G network in NZ: -

1. Health Concerns. As yet any wireless technology has NOT been proven to have ZERO impact on the human body and is linked to negatively impacting a large sector of the population. Refer to the following: -
 - a. <https://www.newstarget.com/2016-07-22-the-cell-phone-radiation-cancer-time-bomb-is-about-to-explode.html>
 - b. <https://globalfreedommovement.org/abc-censors-catalyst-wifi-report-marvanne-demasi/>
 - c. <https://ehtrust.org/>
 - d. <http://www.wakingtimes.com/2014/04/14/neuroscientist-exposes-dangers-electromagnetic-fields/>
 - e. <https://www.naturalhealth365.com/wi-fi-radiation-electromagnetic-fields-lloyds-of-london-1356.html>

2. Doubling of Cell Towers. 5G technology by its very nature requires an increase in the number of cell towers than is currently the case with 4G. The link below indicates that cell towers may need to be implemented every 250 metres. Where are the positive cost benefits of that? More towers equal more cost which is ultimately borne by the consumer thereby increasing the cost of living for individuals, so ZERO cost benefit for individuals. Refer to the following: -
 - a. https://www.massey.ac.nz/massey/about-massey/news/article.cfm?mnarticle_uuid=2CDCB14D-CEE1-6959-5492-B63AD004AE6D

3. Multiple networks. The mobile network industry in NZ currently has 3 providers. As we seem to be market driven the implementation of a single 5G network would then require the competition to catch up. This would then mean the other providers implementing their own networks which would triple the health impacts and triple the cost of network implementation. The need for potentially "connection densities of 1 million connections per square kilometre" is just plain ridiculous for a population of 4.5 million people.

4. Lack of Safety Standards. NZ currently has no safety standards for mobile networks. There is absolutely nothing to ensure there are no harmful effects on the general population. There need to be an INDEPENDENT (with ZERO ties to industry) study BEFORE we go any further into implementing a set of standards to safeguard the health and rights of any individual.

5. Reliability. So, called "very high connection reliability (99.999% for mission critical 'ultra-reliable' communications)" is no more than a business case driver. Recent severe weather events in Auckland saw wide spread power failures. Calling the lines company on my mobile to log a fault resulted in the call dropping out. Repeated the call via a LANDLINE, being the communication backup encountered no such issues. Therefore, the so-called reliability is not there, despite my ISP trying to encourage me to get rid of my LANDLINE. Pure Corporate spin doctoring to drive down and / or slash costs associated with supporting the PSTN (landline) network.

6. Business Need. What issue encountered by private individuals is this technology trying to resolve? If we look at MBIE's own discussion document and the statement "However, other uses identified by the technology developers include self-driving cars, increased use of robotics and industry automation, and massive machine type communications (the internet of things)" indicates a clear desire by corporates and industry for this technology. All that is happening here is business and corporate interests fabricating consumerism in order to SELL. People do not NEED this technology to survive. As a government department, MBIE needs to ensure that the interests of private individuals should be paramount, not the needs of corporates. But perhaps the fact that MBIE is running point on this issue IS the issue. Just look at what MBIE stands for "Ministry for Business, Innovation & Employment". Nothing in there about looking after the health, and wellbeing of the public. Also refer to the following:-
 - a. <https://www.naturalhealth365.com/wi-fi-radiation-electromagnetic-fields-lloyds-of-london-1356.html>, where apparently "Lloyd's of London understands the dangers of Wi-Fi radiation" and MBIE doesn't.

7. Research & Development. There is a lack of Research & Development especially in NZ on this issue. As a result, the implementation of this technology should and must adopt the precautionary principle (see https://en.wikipedia.org/wiki/Precautionary_principle) to safeguard the health and wellbeing of the public. NZ should be a leader in this field. As we are a small nation this can be a benefit. We like to pride ourselves on being a first world nation yet we can treat the public like a third world dictatorship who is the whipping boy of big business and corporates. Why are we not investigating these technologies further when there is increasing evidence of them causing harm? If it's good enough for other countries to adopt a precautionary principle approach why not NZ?

206 Stephanie Moran

Stephanie Moran

Please watch Generation Zapped documentary. There is scientific evidence proving this is adverse to create healthy communities.

207 Michael Macdonald

To whom it may concern. We as kiwis do not need these dangerous wifi frequencies at 60ghz that burns out your brains or 5g as well as cutting down trees in the way to suit the short waves that do not travel very far and to have all these repeaters everywhere thank you.

208 Mary Redmayne

Submission on Preparing for 5G in New Zealand: Discussion Document
Mary Redmayne, PhD

Background of submitter:

- Mary Redmayne, PhD, thesis title “Wireless Phone Use by Young New Zealanders: Health and Policy Implications” Victoria University of Wellington, 2013
- Participating Member Standards Australia and New Zealand Committee TE-007 AS/NZS 2772.2 (2016): Human Exposure to Electromagnetic Fields
- Postdoctoral Fellowship, Monash, 2014-16 with the NHMRC Centre of Research Excellence: Population Health Research on Electromagnetic Energy
- Adjunct Research Fellow, VUW & Monash
- Research qualifications and interests mainly focus on exposure of children, the ill and the elderly to radiofrequency (RF) radiation & effects on health/wellbeing
- 20 peer-reviewed publications (RF exposure & health/policy) and many international presentations

As you will see from my brief biography above, my specialities in this field are related to health effects and policy. All my responses will be with regard to health (addressed in the Discussion Document specifically in questions 3 and 4), and policy in relation to health. This submission addresses the following questions from the Discussion Document although each may not be named specifically. There is a brief answer alongside each one:

Q2. Do you consider competition should be encouraged at the infrastructure level or purely at the retail level for 5G? Why?

Answer Q2: If or when it finally goes ahead, then purely at retail. 5G once operating on millimetre wavelengths will result in an enormous increase in the number of transmitters due to the short range they will cover. As long as having only one provider will result in a lower increase in exposure to mm radiation in the environment, then there should only be one. Environmentally it would also minimise the impact in materials used for infrastructure, would be less visual pollution.

Q3. What regulatory issues need to be considered from a 5G perspective in New Zealand?

Answer Q3: A vital regulatory issue is compliance with the Resource Management Act (New Zealand Government 1991) with respect to the impact on health, wellbeing (mental, physical and emotional), and biological disturbances to homeostasis. The importance of this is central and, apart from not complying with the RMA, ignoring it could create a vast burden in years to come on New Zealanders' health and the cost of health provision.

Q4. What aspects of these regulatory issues are most significant for 5G?

Answer Q4: That millimetre wave parts of the spectrum should not be approved until the specific range of frequencies under consideration has had research done that demonstrates no, or marginal, self-rectifying biological effects even in the most vulnerable (foetus/children, the ill, the elderly).

Q7. Do you agree that the 26 GHz band is a high priority for allocation to 5G in New Zealand?

Answer Q7: No, although possibly better than even higher frequencies. See response to Q4 and specific research below.

Q9. Do you agree that the 31.8 to 33.4 GHz, 40.5 to 42.5 GHz and 42.5 to 43.5 GHz bands are a low priority for allocation to 5G in New Zealand?

Answer Q9: Yes

Summary:

- NZ 2772.1 (1999) is based on health effects related to 6 or 30 minutes heat and shock damage. Other biological effects indicated by research from lower intensity exposures did not in the end contribute to the ICNIRP Guidelines upon which our standard is based as it was considered there was insufficient evidence of health outcomes ,
- Biological effects are not in themselves acknowledged as health effects in NZS 2772.1 (1999) but there is enough evidence now that this really must be

revisited

- The scientific principal guiding that decision has been disproven as witnessed by the use of non-heating exposure to electromagnetic fields for therapeutic purposes
- Non-beneficial effects have been observed from a variety of super-high frequencies
- Highly varied biological responses (positive, none, negative) have been observed from close frequencies. This indicates a strong need to be highly cautious about which frequencies are approved for commercial use
- Heat damage is the clearest concern. Compliance will be difficult and must be stringently enforced. Frequencies of 10 GHz and higher are assessed based on power density. Permitted power density at these frequencies results in extreme to exceptionally high Specific Absorption Rates in skin
- Certain extremely high frequency exposures that fall within the permitted limits of NZS 2772.1 (1999) can cause effects that contravene the requirements of the RMA
- Research on effects of the 5G protocol cannot even be tested yet since the protocol is still under development
- **I do not support 5G using any of these bands until further research demonstrates levels of exposure at which none of the end-points referred to in this submission occur. It is much too early**
- **The NZ Standard may need to be revised and a new more precautionary tier may have to be developed prior to approving 5G for use at more than 6 GHz. Handsets should carry warning labels that devices using or carrying devices against the body runs the risk of exceeding exposure safety limits.**

Summary of risks known, found in some studies or suspected so far (there has been little research at millimetre wavelengths. Those indicating therapeutic possibilities have been more widely researched):

- Heat sensation and damage to skin
- Damage to eyes: cataracts caused by mm RF exposure have been claimed to be uniquely identified by clouding of the posterior part of the lens
- Excessive Specific Absorption Rate (SAR) with permitted levels of power density
- Hearing sensation
- “Sunburn” and skin problems eg dermatitis
- Antigen-presenting cells near skin surface likely to trigger molecular cascades further into body (effects unknown)
- Migrating and damaged mast cells in the skin
- Changes to expression of 7 genes identified
- Individual parts of proteins may be regarded as dipoles. Many of these rotate in response to fields in the 10-20 GHz band
- Increased risk of monocytic or lymphatic leucosis or lymphatic or myeloid leukemia (animal studies, high exposure)

- Mutations caused by cell membranes becoming more permeable to destructive chemical mutagens
- Serious damage to the immune system of laboratory animals.
 - o A decrease in ability to fight infections¹
 - o Immunity to typhoid and other tetanus-related toxins induced by vaccination or by the administration of antitoxins was rendered ineffective.
- Injury and trauma to the internal body organs. Physical alterations in the thymus, spleen, and lymph nodes. Lymphoid organs suffered a total loss of mass

Background

There are two major issues related to possible health effects: one is compliance and the other is health related effects; unfortunately the first cannot be assumed to exclude the second, and as will be shown below does not do so.

In 1988, Stephen Hawking wrote, “Any physical theory is always provisional, in the sense that it is only a hypothesis: you can never prove it. No matter how many times the results of experiments agree with some theory, you can never be sure that the next time the result will not contradict the theory. **On the other hand, you can disprove a theory by finding even a single observation that disagrees with the predictions of the theory...** if ever a new observation is found to disagree, we have to abandon or modify the theory.

At least that is what is supposed to happen but you can always question the competence of the person who carried out the observation.” (Hawking 1988).
(my emphasis)

Millimetre waves are successfully used in many applications for therapeutic purposes, many of which are non-thermal – they do not involve heat or shock (Teppone and Avakyan 2010). This not only disproves the theory on which NZS 2772.1 (1999) is based (that non-heating interactions cannot damage living things), but proves that non-heating radio-frequencies can cause health effects, in this case desired ones. There is also much research indicating millimetre waves can have undesirable effects, a few of which are referred to below. At lower frequencies, the competence of such observations has been repeatedly called into question by certain bodies such as ICNIRP but it is not credible that the huge body of evidence showing undesirable effects its all the result of incompetence! Furthermore, that so many different research groups of high standing would find similar effects. In short, there are many hundreds of observations disagreeing with the predictions of the theory on which our electromagnetic field exposure standard is based.

It has been observed that when exposing people to non-heating levels of frequencies ranging from 48 to 79 GHz, “Frequency variations within fractions of a single percent change the character of sensory responses or result in their disappearance” (Grubnyk, Kaduk et al. 2003).

Such highly varied biological responses indicates a strong need to be highly cautious about which frequencies are approved for commercial use.

¹ decreased phagocytic activity of neutrophils

As research has so far been conducted using such a small number of super high and extremely high frequencies it would be very unwise to progress to approving millimetre bands for general use in public places and for devices used by the public until considerably more research has been undertaken.

NZS 2772.1 (1999) Public exposure levels that are currently permitted

Basic restrictions:

10 MHz to 10 GHz	Rate of RF energy absorption	0.08 W/kg SAR whole body
	Rate of RF energy absorption	2 W/kg SAR head, trunk, limbs
10 – 300 GHz	Power density	10 W/m ² (= 1 mW/cm ² = 1000 μW/cm ²)

Glossary of terms: SAR Specific Absorption Rate; W/kg Watts per kilo; W/m² Watts per square meter; mW/cm² milliWatts per square centimeter; μW/cm² microWatts per square centimeter. These should be noted when reading exposures used that caused effects in the research introduced below.

Research Relevant to Discussion Document Section 2.2

Q 3: What regulatory issues need to be considered from a 5G perspective in New Zealand, and Q4. What aspect of these regulatory issues are most significant for 5G?

Clause 2.2 (p.4) of the Preparing for 5G in New Zealand discussion document refers to the need for the development of 5G networks to include “managing any potential health effects from increased exposure to nonionizing radiation.” (Radio Spectrum Management 2018).

Below is a sample of research findings on effects mainly using extremely high frequencies.

My focus is mainly on extremely high frequencies for which 5G is primarily being prepared. Proposed frequency ranges for 5G consideration are:

- Extremely high frequencies, particularly 24.25 to 27.5 GHz, 31.8 to 33.4 GHz, 40.5 to 42.5 GHz and 42.5 to 43.5 GHz
- I have included just one paper at the 600 MHz band. There appears to be little research in this range.

It should be noted that certain frequencies up to 5.8 GHz have been in common use by the public in New Zealand for some years, with some cordless phones operating at this frequency. It should not be assumed though that that means the currently used frequencies have no health impact. In fact, many biological effects have been clearly demonstrated as resulting from permitted exposures to these emissions, some of which are acknowledged to have the capacity to lead to disease. One of these is oxidative stress.

Ultra high frequencies

a. 600 MHz band

Figure 4 in the Discussion Document indicates that this band incorporates 502 – 698 MHz.

There appears to be very little research on this band. A search using the EMF Portal <https://www.emf-portal.org/en/article/search> and Oceania Radiofrequency Scientific Advisory Association <http://www.orsaa.org/orsaa-database.html> databases found only one study that examined effects in this range.

- an enzyme called L-Lactate Dehydrogenase (LDH) was given five minutes low level exposure at 500, **650**, 700, 750 and 900 MHz. Enzymes are essential for the catalysis of biochemical reactions and in the regulation of the metabolism. They function by speeding up the rate of certain chemical reactions that would otherwise be slow. LDH is expressed extensively in body tissues, such as blood cells and heart muscle. The results showed that only 5 minutes' exposure increased bioactivity of the LDH at 500MHz and 900MHz. But it reduced the bioactivity at **650**, 700 and 750 MHz. This illustrates how varied responses can be at very close frequencies (Pirogova, Vojisavljevic et al. 2008).

Extremely high frequencies, particularly 24.25 to 27.5 GHz, 31.8 to 33.4 GHz, 40.5 to 42.5 GHz and 42.5 to 43.5 GHz

As indicated in the document under discussion (Radio Spectrum Management 2018), 5G is being developed internationally with a view to its being used in the Extremely High Frequency millimetre range of the spectrum. One of the expected uses will be for the Internet of Things, self-driving cars, and AI. There will be extensive interconnection between all manner of household devices and appliances meaning that people at home will have increased on-going exposure in addition to current exposures at lower frequencies. Millimetre waves are 1mm to 10mm encompassing 30 - 300 GHz. While the current proposal suggests starting with lower frequencies but including 26 GHz, the MBIE is suggesting a preference for 4 bands: 24.25 – 27.5 GHz, 31.8 – 33.4 GHz, 40.5 – 42.5 GHz and 42.5 – 43.5 GHz (p. 8). Most other options are higher frequency bands going up to 86 GHz.

26 GHz generates a wavelength of 11.5 mm so is technically just below the millimetre wavelength.

1. Specific Absorption Rate (SAR) and heating risks

- o **Thermal insult** is a well-established acute risk for human exposure to non-ionising electromagnetic radiation and the most researched area for mm waves. It appears all the energy absorbed by humans will penetrate only into the skin and eyes, although research is indicating an interaction with the sweat glands such that they can be regarded as a helical antenna array with the strongest response to >100 GHz.

Extremely high SAR. SAR increases rapidly with frequency. With this the power coupling coefficient increases; also the decreasing skin depth of

penetration decreases reducing the volume of tissue available for absorption of the energy thereby resulting more readily in heat damage.

With the ICNIRP Guidelines (and the NZ Standard) exposures under 10 GHz are assessed using SAR, however those from 10-300 GHz are assessed instead by W/m^2 . The Basic Restriction allowed for the public by ICNIRP guidelines (10 - 300 GHz – Table 5) is $10 W/m^2$ (equivalent to $1 mW/cm^2$), at which level SAR has been calculated to be 131 W/kg at 30 GHz at 0.782mm distance (Table 1 (Gandhi and Riazi 1986))

Dry clothing will act to enhance impedance coupling frequencies where the clothing thickness is wavelength/4. “Peak coupling frequencies are therefore anticipated for frequencies around **37.5 GHz**, 112.5 GHz, 187.5 GHz, and 262.5 GHz” (Gandhi and Riazi 1986). The coupling efficiency could be 90 to 95%. 37.5 GHz is within the 37 – 40.5 GHz band suggesting this should be avoided. **I do not support this band being allotted for 5G.**

Highest acute risk seems likely to result from extended immediate contact with devices (such as carrying a mobile phone in a hand or pocket or using a laptop against the body or legs) or from close proximity of device to the eyes (public) and proximity where transmitters have not been disabled prior to repair (occupational). Workers with roof-top access, such as window cleaners, are at high risk unless transmitters are fenced off.

2. Other possible biological risks

- **Epithelial and stromal injuries to the eye** (seen after 30-60 mins **35GHz** and 107 GHz. Estimated power absorption 15-25 mW for incident power density of $10 mW/cm^2$. Reversible after this duration – further experimentation needed for longer exposures (Gandhi and Riazi 1986). **37.5 GHz is within the 37 – 40.5 GHz band** suggesting this should be avoided. **I do not support this band being allotted for 5G.**
- **Heat sensation** (heat-sensing nerve endings 0.1 – 1.0 mm deep) is very likely to be similar to far infra-red. From a US Airforce report: “In genral [sic], the depth of energy penetration into the body will decline as the frequency of the incident radiation increases. At 10 GHz, the absorption of RF/MW energy will be similar to IR [infra-red] radiation” (Bolen 1988; released to public 1994). Experimental IR detection threshold in Caucasians was $0.67 mW/cm^2$ after 3 seconds. On the face, with an exposure of $0.84 mW/cm^2$, the participants felt a “marked sense of warmth”. There was a stronger sensation when larger areas of naked skin were exposed. Higher frequencies cause the sensation more strongly/rapidly and at lower exposures. They calculate that $8.7 mW/cm^2$ on areas of skin larger than $40.6 cm^2$ could be perceived as “very warm or hot” (Gandhi and Riazi 1986). (Bear in mind the NZ Standard allows $10 mW/cm^2$). **I do not support bands ≥ 10 GHz being alloted for 5G**
- **Sensory nervous system response to harmful or potentially harmful exposures, including Pain sensation** (also referred to as nociception). A

model to explore the effect of the sweat duct glands on specific absorption rate and temperatures during millimeter wave irradiation of skin were investigated using irradiation at 94 GHz. With sweat gland ducts, a higher Specific Absorption Rate maximum was seen inside sweat duct glands in the epidermis while temperature maximum moved to the epidermis/stratumcorneum junction. Sweat gland ducts significantly affected how GHz waves were absorbed in the skin (Shafirstein and Moros 2011)

- **Hearing sensation** pressure from electrostriction at GHz frequencies is higher than that of thermal expansion for lower frequencies. The energy densities per pulse to cause hearing clicks/chirps or other sound effects are a factor of 8 to 28 times larger at 30-300 GHz than those below 3 GHz (Gandhi and Riazzi 1986).
- **Sunburn-like effect. A quote:** “The receptive nerve terminals as well as the outermost antigen-presenting cells are only a few microns away from the [skin] surface, so they will be affected and consequently alarm the rest of the body through molecular cascades of various sorts. (The antigen-presenting dendritic cells just leaves and travels deeper into the body, carrying the information with them (as they do when hit by e.g. sun rays later leading up to a **post-inflammatory hyperpigmentation** (I believe you call this phenomenon "sunburn")). Finally, the **pigment-producing melanocytes** are also just a few cell layers beneath the cutaneous surface, so they **will also be gravely affected.**” (Personal communication, original bold font, January 2017, Assoc Prof Olle Johansson, Karolinska Institute, neuroscientist specialising in cutaneous radiofrequency effects).
- **Possible increase in skin conditions such as dermatitis.** Mast cells have been found to migrate towards the skin surface and some cells' content was lost or shrank after exposure (Johansson, Gang et al. 2001). Reactions have been stronger in electrohypersensitive people (Johansson 2006). These were not specifically mm wave exposures, but since skin absorbs all the energy of mm waves these results should be taken seriously.
- **Hyperthermia-related responses** Biocompatibility of millimetre waves at 60 GHz has been evaluated. They used a whole gene expression approach to assess the effect of acute 60 GHz exposure on primary cultures of human skin cells producing keratin (keratinocytes). Millimetre wave exposure at 20 mW/cm² ... led to an increase of temperature and to a strong modification of keratinocyte gene expression (665 genes differentially expressed)... By RT-PCR², they analyzed the time course of the transcriptomic response and 7 genes have been validated as differentially expressed. The data evidenced a specific electromagnetic effect of millimetre waves, which is associated to the cellular response to hyperthermia. This study raises the question of co-

² **Reverse transcription** polymerase chain reaction (**RT-PCR**), a variant of polymerase chain reaction (**PCR**), is a technique commonly used in molecular biology to detect RNA expression (source Wikipedia)

exposures associating radiofrequencies and other environmental sources of cellular stress (Habauzit, Le Quement et al. 2014).

3. NASA 1981 report (Raines 1981)

Interrupted protein function “According to research physician David Straub (VA Hospital, Little Rock), if proteins are dislodged from their sites in membranes, much time passes until random motion restores them. Meantime, the conduction function performed by those proteins is interrupted. At high frequencies, individual parts of proteins may be regarded as dipoles. Many of these rotate in response to fields in the 10-20 GHz band.” P.67 (Raines 1981) [effect of this rotation not discussed].

Cataracts “Over fifty [cataracts] have been attributed to exposure at microwave frequencies (roughly 3-300 GHz). One ophthalmologist claims these cataracts can be uniquely identified by clouding of the posterior part of the lens, in contrast to clouding of the anterior part in other cases.” p.26 (Raines 1981). This report does not identify the intensity of the exposures, but this range includes the 3.5 GHz band and all internationally and NZ proposed Extremely High frequency bands.

Cancer A US Airforce 1994 report (Bolen 1994) [originally prepared in 1988 for US Airforce] states, “Pathological Reports: In 1962, S. Prausnitz and C. Susskind reported experimental results that showed an increase in cancer among test animals exposed to RF/MW radiation. In the experiment, 100 male Swiss albino mice were irradiated by a **10 GHz** source at an incident power density of **about 100 mW/cm²**. The mice were exposed for 4.5 minutes/day, 5 days/week for a total of 59 weeks. It was noted that irradiation caused the whole-body temperature of the mice to rise about 3.3TC. Upon examination, it was found that 35% of the mice had developed cancer of the white blood cells. The disease was observed as monocytic or lymphatic leucosis or lymphatic or myeloid leukemia. Only 10% of a similar control group had developed cancer [21].” P.5 (Bolen 1994). The NZ Standard allows only 1/100th of this exposure, however the proposed 26 GHz would heat considerably faster than the 10 GHz used in this experiment as would any higher frequency bands. The higher the frequency, the faster the heating. **I do not support the 10 GHz or higher frequency bands being allotted for 5G.**

Mutagenic Effects: In 1974, Danilenko, Mirutenko, and KIudrenko. Mutagens observed to form in cells that were irradiated by a pulsed RF/MW source operating at **37 GHz** and 1 mW/cm² power intensity. They concluded that irradiation of tissue by pulsed RF/MW sources causes cell membranes to become more permeable to destructive chemical mutagens [8].” P.6. (Bolen 1994). 37 GHz is within the 37 – 40.5 GHz band suggesting this should be avoided. **I do not support the 37 – 40.5 GHz band being allotted for 5G.**

“Immunoaological Effects: 1979, N. P. Zalyubovskaya and R. I. Kiselev. Exposure to RF/MW radiation caused **serious damage to the immune system** of laboratory

animals. They exposed mice to an RF/MW source radiating at **46.1 GHz** with an incident power intensity of 1 mW/cm² for 15 minutes/day for 20 days, it was observed that the number of leukocytes [white blood cells] in the bloodstream of the mice decreased as a result of irradiation.

Zalyubovskaya and Kiselcy reported:

- A decrease in ability to fight infections³
- Immunity to typhoid and other tetanus-related toxins induced by vaccination or by the administration of antitoxins was rendered ineffective.
- Injury and trauma to the internal body organs. Irradiation had caused physical alterations in the thymus, spleen, and lymph nodes.
- The lymphoid organs suffered a total loss of mass [17].”(Bolen 1994) p.11

46.1 GHz is within the 45.5 to 47 GHz band suggesting this should be avoided. I do not support this band being allotted for 5G.

It is clear that certain extremely high frequency exposures that fall within the permitted limits of NZS 2772.1 (1999) can cause effects that contravene the requirements of the RMA.

Mobile phone handsets

It has recently been revealed that a great many mobile phone handsets do not meet exposure requirements, exceeding the permitted exposure level by several-fold when used close to the body (CBC Marketplace 24 March 2017, Davis 2018).

As much research indicates clear cellular damage with radiofrequency exposures typical of some phones, for example oxidative stress (Yakymenko, Tsybulin et al. 2016), DNA damage (Ruediger 2009) and activation of DNA damage repair mechanisms even stronger than by gamma radiation (He, Sun et al. 2016), this strongly indicates that New Zealand cannot rely on its current approach to compliance certificates issued overseas for imported phones.

I strongly recommend that all mobile and cordless phones sold in New Zealand should carry a label on the packaging and the phone alerting users to the need to use and carry the phone away from the body to ensure compliance.

Policy

There are many persuasive economic and technology reasons for considering frequencies higher than 6 GHz, but the consideration of effects to people, animals and plants, even potential effects, is legally required by the Resource Management Act (New Zealand Government 1991).

³ decreased phagocytic activity of neutrophils

The purpose of the Act includes, promoting sustainable management of natural and physical resources ...while “avoiding, remedying, or mitigating any adverse effects of activities on the environment” (Part 2 Section 5c) and the environment includes, “(a) ecosystems and their constituent parts, including people and communities” (Part 1 Section 2 (1)) (New Zealand Government 1991).

The meaning of “effect” in the Act, unless the context otherwise requires, includes:

- (a) any positive or adverse effect; and
- (b) any temporary or permanent effect; and
- (c) any past, present, or future effect; and
- (d) any cumulative effect which arises over time or in combination with other effects—regardless of the scale, intensity, duration, or frequency of the effect, and also includes—
- (e) any potential effect of high probability; and
- (f) any potential effect of low probability which has a high potential impact.

Section 3: amended, on 7 July 1993, by [section 3](#) of the Resource Management Amendment Act 1993 (1993 No 65).

Health effect

The definition of “health effect” in NZS 2772.1 (1999) is very limited and in the context of what is known today is very misleading. The consequence is that our RF exposure standard allows exposures which result in a wide range of biological effects, some of which are known to lead to disease states. Such exposures are encountered routinely. This already applies to frequency bands and modulation in current use. This submission presents information on further effects demonstrated by higher frequency exposures.

It is too early know what effects may result from the 5G protocols since they are still under development (Radio Spectrum Management 2018) and therefore this aspect has not been tested. Research must take place after the protocols are decided so these specific exposure parameters can be tested.

The ICNIRP Guidelines on which NZ standard relies state, “An adverse health effect causes detectable impairment of the health of the exposed individual or of his or her offspring”, going on to exclude non-thermal biological effects. So the ICNIRP guidelines (and our standard) are “based on short-term, immediate health effects such as stimulation of peripheral nerves and muscles, shocks and burns caused by touching conducting objects, and elevated tissue temperatures resulting from absorption of energy during exposure to EMF” (ICNIRP 1998).

They specifically exclude,

“potential long-term effects of exposure, such as an increased risk of cancer...

An adverse health effect causes detectable impairment of the health of the exposed individual or of his or her offspring; a biological effect, on the other hand, may or may not result in an adverse health effect.

“In-vitro effects of short-term exposure to ELF or ELF amplitude-modulated EMF are summarized. Transient cellular and tissue responses to EMF exposure have been observed, but with no clear exposure-response relationship. These studies are of limited value in the assessment of health effects because many of the responses have not been demonstrated in vivo. Thus, in-vitro studies alone

were not deemed to provide data that could serve as a primary basis for assessing possible health effects of EMF.”

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209 Peter Volker

Submission to MBIE

Preparing for 5G in New Zealand

Introduction of a 5G system for radio communication will substantially increase exposure of many people to electro magnetic radiation.

The effects of the present degree of radiation do not get published widely. Also it is almost certain that adverse effects are not linked by people who are affected to electromagnetic radiation.

Independent scientists have severely warned against the effects of 5 G exposure.

It is more important to protect people from further exposure than that again more powerful means of communication are installed.

No such a new network should be allowed in the long term public interest of especially a healthy population.

Peter Volker

210 Amanda Dunlop

I would like to register my very strong opposition to this technology being rolled out in the way being planned.

I am severely affected by WiFi, Cell phones and magnetic Field. I already find it impossible to stay in Auckland and Wellington where there is a lot of public Wifi, and I am affected by Wifi from neighbouring houses.

I have had to change my lifestyle and move to a rural area in order to maintain my work and health. I suffer with migraine, aching joints, weakness and swollen glands when around Wifi and other Fields for more than an hour at a time. I have severe Tinnitus which is made immediately worse when entering a building or area with Wifi. The affect is almost instant. The longer I am in a high Wifi area the less cognitive function my brain has. Losing thoughts and words increasingly as the minutes go by.

If this technology is implemented in such wide spread manor it will cause declining health for many people affected. This technology is NOT safe. I know from personal experience.

You will be causing a health crisis within the next decade if this is implemented.

Regards

Amanda

211 Justin Goddard

To whom it may concern

I would like to make a submission regarding 5g cellular technology in NZ.

5G technology is unnecessary. Nz's existing copper network is completely capable of

handling the internet
needs of the NZ population. The copper network needs to be left alone to do its job, managed
by NZ companies
and be free from throttling and other such intentional interference to its performance.

Millimeter wave 5g technology can only travel short distances and this will mean towers at
250m intervals,
and the potential removal or death of vegetation, this is unacceptable. Plans for 5g in NZ will
mean over saturation
of unnecessary EMF radiation. The risks to the health of man, animals, plants and insects
need to be made clear to
each and every NZer who will be effected before any decisions are made.

Honest, unbiased, independent studies and reports need to be made using, sound scientific
method. The findings of these studies need to
be presented to all NZer's free of fallacy and deception.
Fair and proper timeframes for all potentially effected individuals, to know and comprehend
all of the risks and any potential benefits of 5G
need to be given and respected.

NZ has the cheapest most abundant power generation in the world and there is no need
whatsoever to monitor every device in every house in NZ.
This has never and will never be necessary.
Over inflated benefits of this system are far outweighed by its potential harm to every facet
of NZ life and living.
Increased cancer rates and the cost to healthcare, increased potential for surveillance of
every NZer and NZ household, significant risk to plant and insect life.
All offset by the promise of being able to watch movies while riding on the bus.
This is a completely absurd proposition from start to finish.

The steamrolling of this technology into NZ is evidence of the desire of the state to use the
technocratic model, to monitor and control
all NZers, their behaviour and environments.

I hope this email is read by members of the NZ Government (MBIE) who still work for NZer's
and have the best interests of NZer's at heart,
and possibly even still have the ability to stop this absurdity now.

I do not consent to this technology being introduced into NZ.

Thank you for your time

Justin

212 Elizabeth Anderson

To Whom It May Concern,

Please carefully consider the impact of moving to a 5G system in NZ. There are numerous concerns about the safety of the 5G system, so I will convey my top concerns below.

Moving to a 5G system will dramatically increase the exposure of wireless radiation for most New Zealanders. As a mother to three young children, this is a massive concern to me. Young brains need to develop properly without the interference of dangerous radiation created by wireless technology.

It is my opinion that the 5G technology is simply unnecessary as the majority of New Zealanders have acceptable internet access. It would seem wise for the New Zealand government to adopt a "wait and see" approach to 5G technology, rather than subject millions of citizens to technology that is untested in its impact on our health and wellbeing.

My family already takes many steps to reduce our exposure to harmful EMF from the many different sources. Adding another dimension to that with 5G technology is, frankly, an unnecessary breach.

Sincerely,
Elizabeth Anderson

213 Ngaire Small

My name is Ngaire Small and I wish to submit on the proposed rollout of the 5G network in New Zealand.

I am concerned that this technology carries a lot of dangers to human health and every living thing on the planet. The need to implement faster processing speeds is unnecessary, the copper network and fibre optic network already cater for fast internet. Faster processing speeds require more bandwidth, and 5G will use untapped bandwidth of the extremely high-frequency millimetre wave. As these MMWs travel short distance and do not travel well through buildings etc, our neighbourhoods will be littered with small cell towers everywhere, saturating whole communities with this microwave radiation. This requires excessive numbers of connections for less than 5 million people! I am aware of people already currently suffering sensitivity to electromagnetic radiation and there will be no choice on further exposure from 5G radiation.

I am concerned that this is being considered for roll-out WITHOUT safety testing. The public should be notified via public websites of results from testing of 5G capable devices prior to any considered roll-out. There are serious health concerns attached to this as numerous researchers have warned which need to be taken into consideration. With the World Health Organisation having classified the use of mobile phones as a potential 2B carcinogen, testing 5G technology first is crucial as there is no proven safety. Among the many health concerns are the effect this has on our DNA strand breaks, disruption of cell metabolism, blood-brain permeability, melatonin reduction, disruption of brain glucose metabolism, generation of stress proteins and the implications of this.

We have 3 networks in NZ all indicating they will roll out their own 5G networks. If 5G does not already comply with NZ's allowable limits of RFR's at 1:1999, (already a high legal exposure level when compared to other countries), then increasing the legal limits to cater for 5G is likely to impact human health and the NESTF must take this into consideration. I would oppose any increase in this level.

I strongly oppose the introduction of 5G in New Zealand for all the above reasons, in particular the exposure to even more cancers linked to cell-phone use. New Zealand already has an acceptable fast internet capability and introducing more cell towers **without safety testing the effects on human health** first would be highly irresponsible. I do not agree with the use of 'smart' devices needing to communicate with towers at the risk of compromised health. I object to having my rights to protect myself and my families health against such high exposure levels denied for the sake of faster internet speed and communication technology.

Ngairé Small
NELSON

216 Carol Miller

I am making this submission because I am electromagnetically sensitive. At least now I can use the internet through a copper wire connection and then turn it off to minimize my exposure to Radio Frequency Radiation. If 5G is installed I will have no way of escaping the dangerous health effects of R.F radiation. My home will no longer be a safe, healthy living space for me.

I will not even be given the choice to escape being irradiated constantly by this unsafe, poorly regulated 5G rollout, not only by one provider, but 3, if Spark, Vodafone and 2 Degrees have their way.

I think that 5G is simply unnecessary because internet access in NZ is already acceptable in most areas, especially considering that most New Zealanders have access to the internet via the copper landline system, the new fibre optic networks being progressively rolled out around the country and/or the 4G system.

Please can NZ have the common sense to wait to see what health impacts 5G infrastructure and 5G compatible devices may have in other countries where this technology is adopted prior to rushing into adopting what is essentially a technology of (at this stage) unproven safety?

If a 5G system in NZ would eventually facilitate 1 million internet connections per square kilometer, I think this is ludicrous for a country that has only about 4.5 million people and a low population density. This huge number of connections would be used to facilitate what has been called the Internet of Things (IoT) which allows devices to communicate with each other, how foolish to expose New Zealanders to the health risks of additional wireless

infrastructure to facilitate appliances such as a domestic fridge talking a smart meter.

According to the discussion document NZ has NO safety standards for the cellular phones on the market (but allows the importation of any cellular phone that is compliant with any other countries' regulations). This shows a worrying lack of concern for New Zealanders' health.

It is especially worrying considering the research linking cellular phone use to brain tumours and the fact that according to the documentary Generations Zapped, there was NO pre-market safety testing of cellular phones prior to their introduction to the market.

The Spectrum NZ discussion document does NOT suggest that NZ should do its own pre-market testing of cellular phones that are designed to be compatible with the 5G system.

There are already modems in development that are designed to be used in situations where there is both 4G coverage and millimetre wave coverage.)

Cellular phones that are 4G and 5G compatible would therefore potentially expose users to potentially carcinogenic RFR microwave radiation from the 4G system PLUS millimetre waves. Based on the short wave length of millimeter waves, the main health concerns at this stage – further.research is desirable – appear to be potential adverse effects on the skin and the eyes.

I think that the NZ government should commission safety testing of 5G compatible modems and smart phones and other devices prior to their being marketed in NZ and that all the test data for 5G compatible phones should be published on a publicly accessible website.

The NESTF is the "National Environmental Standard for Telecommunications Facilities". Under this standard the allowable emissions limit for 5G infrastructure using millimetre waves (or any frequency in excess of 2 GHz to 300 GHz) is 10 million microwatts per square metre (10 w/m²).

New Zealand's standard for devices that produce RFR in the microwave range is already one of the poorest in the world. In NZ the legal limit for exposures to this type of radiation under NZS2772.1:1999 is much higher than in many other countries. (For example, in China, Italy, Russia and Switzerland, the limit is 10 times lower at 1 w/m².)

NZ has high legal exposure levels despite the fact that RFR in the microwave range is classified as a possible carcinogen (type 2B) by the World' Health Organization's International Agency for Research on Cancer (IARC) and despite the fact that NZ has a high cancer rate.

If NZ's already lax limits for exposure to RFR in the microwave range are revised upwards because the system proposed for 5G would be likely to exceed the current limit, this could have negative impacts on human health.

I would oppose any increase to the allowable public exposure limit for RFR in the microwave range.

My overall attitude towards 5G is that the cost (to individuals, families and society) of loss of productivity due to illness and treating potential adverse health effects caused by greater utilization of wireless technologies could end up outweighing any economic benefits of 5G?

Below is an article that I wish to include in this submission that explains very clearly the potential danger and health risks that NZ would be open to if New Zealanders do not think very carefully about the installation of 5G. This article was first written 2007 and then updated in 2012. Writing this submission now I can see that nothing about the safety concerns to RFR radiation has changed over the past years.

BIOINITIATIVE 2012 – A rationale for biologically-based Exposure Standards for Low-Intensity Electromagnetic Radiation

DO WE KNOW ENOUGH TO TAKE ACTION?

There is more evidence than we need.

The last five years worth of new scientific studies tell us the situation is much worse than in 2007 and yet people around the world have so much more daily exposure than even five years ago. Exposures are linked to a variety of adverse health outcomes that may have significant public health consequences. When added across billions of people world-wide, no argument for the status quo can be persuasive now.

In twenty-one technical chapters of this 2012 update, the contributing authors discuss the content and implications of about 1800 new studies. Overall, there is reinforced scientific evidence of risk where there is chronic exposure to low-intensity electromagnetic fields and to wireless technologies (radiofrequency radiation including microwave radiation).

There is more evidence in 2012 that such exposures damage DNA, interfere with DNA repair, evidence of toxicity to the human genome (genes), more worrisome effects on the nervous system (neurology) and more and better studies on the effects of mobile phone base stations (wireless antenna facilities or cell towers) that report lower RFR levels over time can result in adverse health impacts. There has been a big increase in the number of studies looking at the effects of cell phones (on the belt, or in the pocket of men radiating only on standby mode) and from wireless laptops on impacts to sperm quality and motility; and sperm death (fertility and reproduction).

In other new studies of the fetus, infant and young child, and child-in-school – there are a dozen or more new studies of importance.

The 2007 BioInitiative Report was prepared by world- recognized experts in science and public health policy. Outside reviewers also contributed valuable content and perspective. It was concluded even in 2007 that existing public safety limits were inadequate to protect public health, and agreed that new, biologically- based public safety limits were needed five years ago. The public health cost of doing nothing was judged to be unacceptable in 2007. This did nothing to change the rules, nor roll back the technology tsunami of wireless-everywhere.

The levels of exposure we face in 2012 are higher, and have crept into everyday life, even for children. The levels at which undesirable effects on health and well-being are seen is much lower. The levels of concern have dropped lower in 2012 by 10s to 100s of times. There is much greater involuntary exposure, and it is nearly unavoidable even for people who choose not to 'go wireless' (second-hand radiation effects). Safe forms of communication by land-line telephone are being phased out without general public knowledge or agreement. There is no informed consent for consumers (warning labels on cell phones, for example, have been defeated by telecom industry lobby groups). It is still difficult or impossible for a consumer to get reliable information on levels of exposure from wireless devices, It is simply beyond the reach of people to identify where excessively high levels of exposure occur in their communities, and it is very rare for a county or state health department to accommodate requests for information or provide measurements.

Today the evidence is stronger than ever and it may be placing people at risk, but most people have no idea. There is little indication that cell phone users (whose numbers have risen from roughly 2 billion in 2006 to 6 billion users globally in 2012) are aware of the risks. In that time, whole-body exposures from other RFR sources like WI-FI, WI-MAX, smart grids using wireless utility meters, and vast commercial applications of wireless RFR (in commerce, transportation, in banking, in surveillance and monitoring, in medical imaging and ironically in health care record-keeping and learning environments for education – all these new applications of wireless over wired communications and data transmission add to the RFR

saturation in cities. Wireless laptops and wireless internet in schools, and home offices and for homework mean even more chronic exposures to RFR, a designated IARC 2B Possible Human Carcinogen (May 31, 2011).

The range of possible health effects that are adverse with chronic exposures has broadened. The most serious health endpoints that have been reported to be associated with extremely low frequency (ELF) and/or radiofrequency radiation (RFR) include childhood and adult leukemia, childhood and adult brain tumors, and increased risk of the neurodegenerative diseases, Alzheimer's and amyotrophic lateral sclerosis (ALS). Recent studies largely reinforce the potential risks to health (rather than reducing our concerns, or providing actual indications of safety). In addition, there are reports of increased risk of breast cancer in both men and women, genotoxic effects (DNA damage, chromatin condensation, micronucleation, impaired repair of DNA damage in human stem cells), pathological leakage of the blood-brain barrier, altered immune function including increased allergic and inflammatory responses, miscarriage and some cardiovascular effects. Insomnia (sleep disruption) is reported in studies of people living in very low-intensity RFR environments with WI-FI and cell tower-level exposures. Short-term effects on cognition, memory and learning, behavior, reaction time, attention and concentration, and altered brainwave activity (altered EEG) are also reported in the scientific literature. Biophysical mechanisms that may account for such effects can be found in various articles and reviews.

We could do otherwise. Each wireless need had a wired solution in counterpart that has none of the health effects that wireless RFR does, with the exception of cell phone use for talking directly to someone. It is time to re-think the wireless tsunami and educate people about health, privacy and security risks. It is past time to develop new safety standards. It is necessary now to look to less harmful ways to communicate, move ourselves from place to place, shop, sleep, recreate, save energy, and educate our children in school. It is time to rethink our global commerce, energy, banking, transportation and communications infrastructures so we are all committed to sustaining healthy living spaces and conserve safe sanctuary for all species on earth.

I would not like to speak to this submission.

Yours sincerely,

Ms C. Miller

217 J Cleghorn

Submission on the consideration of 5G Network system in NZ

I am very concerned about the potential to double the cellular phone towers to access 5G specifically due to living with a range of health conditions that include being EMF sensitive.

For those of use that are young, aged or have poor immune function adding more EMF exposure increases our risks to a range of extra health challenges our immune systems are unable to tolerate. We are already vulnerable to so many things that we are exposed to in an ever increasing time of many environmental toxins including EMF radiation. This needs to be taken seriously.

Research has shown increased cancer rates in people living close to cellular infrastructure.

According to the link below, 'millimetre wave' frequencies cannot travel more than 250 metres which means that areas where 5G uses millimetre wave frequencies will need to have millimetre wave transmitters every 250 metres or less.

<http://www.massey.ac.nz/massey/about-massey/news/article.cfm?mnarticle_uuid=2CDCB14D-CEE1-6959-5492-B63AD004AE6D>
http://www.massey.ac.nz/massey/about-massey/news/article.cfm?mnarticle_uuid=2CDCB14D-CEE1-6959-5492-B63AD004AE6D

That a 5G system in NZ could eventually facilitate 1 million internet connections per square kilometre...The huge number of connections could be used to facilitate what has been called the Internet of Things (IoT) in which allows devices to communicate with each other. (In his lecture in Auckland in 2013, Don Maisch PhD, an expert on standards for electromagnetic radiation described smart meters as a key component of the IoT – his lecture may be accessed via the following link: <<http://www.stopsmartmeters.org.nz/uncategorized/dr-don-maisch-auckland-lecture-now-online/>>
<http://www.stopsmartmeters.org.nz/uncategorized/dr-don-maisch-auckland-lecture-now-online/>)

If we do go ahead with a 5G network It would be better for people's health to have only one 5G network rather than three (if Spark, Vodafone and 2 Degrees all decide to build their own 5G networks).

There are currently no safety standards in NZ for cellular phones! According to the discussion document NZ has NO safety standards for the cellular phones on the market (but allows the importation of any cellular phone that is compliant with any other countries' regulations) shows a worrying lack of concern for New Zealanders' health.

It is especially worrying considering the research linking cellular phone use to brain tumours and the fact that according to the documentary " <<https://generationzapped.com/>> Generations Zapped, there was NO pre-market safety testing of cellular phones prior to their introduction to the market.

The Spectrum NZ discussion document does NOT suggest that NZ should do its own pre-market testing of cellular phones that are designed to be compatible with the 5G system.

There are already modems in development that are designed to be used in situations where there is both 4G coverage and millimetre wave coverage.)

Cellular phones that are 4G and 5G compatible would therefore potentially expose users to potentially carcinogenic RFR microwave radiation from the 4G system PLUS millimetre waves.

Based on the short wave length of millimeter waves, the main health concerns at this stage – further research is desirable – are potential adverse effects on the skin and the eyes.

The NESTF is the "National Environmental Standard for Telecommunications Facilities" and under this standard the allowable emissions limit for 5G infrastructure using millimetre waves (or any frequency in excess of 2 GHz to 300 GHz it is 10 million microwatts per square

metre (10w/m2).

New Zealand's standard for devices that produce RFR in the microwave range is already one of the poorest in the world. In NZ the legal limit for exposures to this type of radiation under NZS2772.1:1999 is much higher than in many other countries. (For example, in China, Italy, Russia and Switzerland, the limit is 10 times lower at 1 w/m2)

NZ has high legal exposure levels despite the fact that RFR in the microwave range is classified as a possible carcinogen (type 2B) by the World' Health Organizations' International Agency for Research on Cancer (IARC) and despite the fact that NZ has a high cancer rate.

If NZ's already lax limits for exposure to RFR in the microwave range, this could have negative impacts on human health.

I believe that NZ should wait to see what health impacts 5G infrastructure and 5G compatible devices may have in other countries where this technology is adopted prior to rushing into adopting what is essentially a technology of (at this stage) unproven safety?

I believe that the cost (to individuals, families and society) of loss of productivity due to illness and treating potential adverse health effects caused by greater utilisation of wireless technologies could end up outweighing any economic benefits of 5G?

Yours sincerely

J Cleghorn

218 Denise Bauer

Submission:

5G is a military weapon and should not be used for us, citizens. The EMF is way too strong for us and is a hazard for our health. Do they want to kill us, slowly?

Sent from my iPad

230 Becky Friend

B. Friend

The reason I'm making this submission is because of the very fact that 5G is going to expose the population of the world and plants and animals and our grandchildren to much more electromagnetic radiation.

The people that are releasing this new technology have refused to do any testing

whatsoever and just plan to expose the population at large.

We are not lab rats and we are well aware that radiation has a long list of adverse biological effects such as DNA single and double strand breaks and oxidative damage. Disruption of cell metabolism.... Increased blood brain barrier permeability... Melatonin reduction... Disruption to brain glucose metabolism... Generations of stress proteins... Disruption of the natural ecosystem.... effects on plant health and to the atmosphere.

There is also a warning from the World Health Organization that it could cause cancer. All in all, this new technology is crying out for further research before releasing it, as once it is released there maybe no second chances and there is not a plan B.

It seems that there is a lot of money to be made and people in power seem to only hear about profits and consider safety last.

I would also like to include this article to further detail the possible harm from the implementation of 5G RF radiation.

CITIZENS UP IN ARMS AGAINST 5G TECHNOLOGY ROLL-OUT: ARE THEIR CONCERNS JUSTIFIED?

What is 5G?

The 5th generation wireless systems (5G) are new network technologies designed to make your cell phone and similar wireless devices become super-duper powerful and fast.

Scheduled to be deployed from 2018 and made commercially available in 2020 [2] we are told 5G is expected to support at least 100 billion devices and up to 100 times faster than current 4G technology. (4G is already about 10 times faster than 3G).

The 5G tech will employ low-(0.6 GHz - 3.7 GHz), mid-(3.7 – 24 GHz), and high-band frequencies (24 GHz and higher). The “high-band” frequencies largely consist of millimeter waves (MMWs), a type of electromagnetic radiation with wavelengths within 1- 10 millimeters and frequencies ranging from 30 to 300 GHz.

Health Hazards from Cell Phone Technology “Beyond Measure”

Cell phones operate essentially by sending and receiving radiofrequency radiation from their antennas to a nearby cell tower.

Thousands of independent studies link Radiofrequency radiation exposures from cell phones to a number of very serious diseases such as; [Cancer](#) [3], [Infertility](#) [4], [Cardiovascular Diseases](#) [5], [Birth defects](#) [6], [Memory Problems](#) [7], [Sleep Disorders](#) [7] and so on.

5G Technology Comes With Increased RF Radiation Exposure

These millimeter waves (MMWs) as used by the 5G network can transmit large

amounts of data within a short period of time. But over short distances and also, the other big issue is that the signal is poorly transmitted through solid materials.

This means massive transmission of MMW will be needed.

Many new antennas will be needed. We are told full-scale implementation may require at least one antenna for every 10 to 12 houses in urban areas.

Also, the MIMO (multiple-input multiple-output) technology is expected to be used massively. The MIMO technology is a wireless system that uses multiple transmitters hence, it is able to send and receive multiple/more data at once. Some 4G base stations already use MIMO technology. Standard MIMO involves four to eight antennae. MIMO for 5G may involve approximately 100 antennas per cell tower – that’s a lot of antennas!

Increased transmission leads to increased capacity, so electromagnetic radiation levels can only increase. The concern is that, given what we know about radio frequency radiation, this **mandatory environmental increase in exposure to EM radiation** will lead to increased health risks.

A number of studies have demonstrated the detrimental health effects of the MMW frequencies used in 5G technology.

Damaging Effects on the Human Skin

One Israeli study [8] lead by Dr. Yuri D Feldman found that human sweat ducts act as an array of tiny, helix-shaped antennas when exposed to MMWs. Their findings suggest that human skin not only absorbs but also amplifies the radiation from MMW networks.

A study carried [9]out to evaluate the interactions and implications of MMWs (60GHz) with the human body discovered that *“more than 90% of the transmitted (MMWs) power is absorbed in the epidermis and dermis layer.”*

The effect of MMWs on the skin is arguably the greatest concern of these new wavelengths utilized by 5G technology.

We might well be looking at the possibility of increased incidences of many skin diseases and cancer in the coming years in areas where the 5G technology is deployed.

Profound Effect On Immune System

A 2002 Russian study [10] carried out to examine the effects of high-frequency [electromagnetic radiation](#) (42HGz) exposure on the blood of healthy mice found that, the activity of cells involved in immunity such as the neutrophils reduced drastically (about 50% decrease in activity).

It was concluded that *“the whole-body exposure of healthy mice to low-intensity EHF EMR has a profound effect on the indices of nonspecific immunity.”*

Damaging Effects on The Heart

A 1992 study [11] found that frequencies in the range 53-78GHz impacted the heart rate variability (an indicator of stress) in rats. A Russian study [12] on frogs whose skin was exposed to MMWs discovered abnormal heart rate changes ([arrhythmias](#)).

Hazardous Effects on the Eyes

In 1994, a study [12] carried out in Poland to evaluate the influence of millimeter radiation on light transmission through the lens of the eyes. It was discovered that low-level MMW radiation produced lens opacity in rats, which is associated with the production of cataracts.

A Japanese experiment [13] carried out to examine the potential for 60-GHz millimeter-wave exposure to cause acute ocular injuries found that 60GHz
“...millimeter-wave antennas can cause thermal injuries of varying types of levels. The thermal effects induced by millimeter waves can apparently penetrate below the surface of the eye.”

180 Scientist and Doctors Call For A Moratorium

Scientists are concerned as well. More than 180 scientists and doctors from 35 countries [14], have recommended a temporary ban on the roll-out of 5G technology until its potential hazards on human health and the environment have been fully evaluated by scientists independent of the telecommunication industry.

What Are The Real Dangers Of 5G Technology?

The short answer is: we don't fully know yet! But the [studies](#) we have on this are a cause for concern.

The health hazard of the most studied 3G CDMA technology (shown to cause an array of detrimental health effects) have not been fully revealed, yet, here we are, at the verge of adopting a potentially more dangerous technology.

Don't you think we should fully evaluate the health effects of 5G before rolling out the technology?

Let's not forget, alternatives to wireless mobile technology are available. Fiber Optic Broadband Technology is a feasible and safer alternative. I firmly believe that technological improvement can be attained without jeopardizing the health of the general public.

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I would not like to speak to this submission.

Yours sincerely,

Becky Friend,

234 Grace Baylis

To whom it may concern:

I am writing to object to the current plan to roll out 5G EMF. Before being implemented across NZ, 5G needs further impartial study to evaluate the affect that 5G has on human, animal and plant health as there is already significant evidence that it is damaging to all living things.

We're still trying to figure out how electromagnetic radiation involved with current forms of wireless technology are impacting human health. Are we willing to expose millions of New Zealanders to even higher levels of electromagnetic radiation through wireless technologies when we don't even know what the true 5G health effects really are in the name of technology?

For decades things like cigarette smoke, DDT, Monsanto and other pesticides were seen as safe, when we now know they're linked to cancer and other health problems. So are we going to do it again — on a massive scale — with wireless without even properly studying human health impacts. Or considering possibly safer ways of doing things?

Dr. Joel Moskowitz points out, most 5G studies are misleading because they do not pulse the waves. This is important because research on microwaves already tells us how pulsed waves have more profound biological effects on our body compared to non-pulsed waves. Previous studies, for instance, show how pulse rates of the frequencies led to gene toxicity and DNA strand breaks.

“It would irradiate everyone, including the most vulnerable to harm from radio frequency radiation: pregnant women, unborn children, young children, teenagers, men of reproductive age, the elderly, the disabled, and the chronically ill.”
—Ronald Powell, PhD, Letter to FCC on 5G expansion

A 2016 Armenian study observed MMWs at low intensity, mirroring the future environment brought about by 5G. Their study conducted on E-coli and other bacteria stated that the waves had depressed their growth as well as “changing properties and activity” of the cells. The concern is that it would do the same to human cells.

The very same Armenian study also suggested that MMWs effects are mainly on water, cell plasma membrane and genome too. They had found that MMW’s interaction with bacteria altered their sensitivity to “different biologically active chemicals, including antibiotics.” More specifically, the combination of MMW and antibiotics showed that it may be leading to antibiotic resistance in bacteria.

This groundbreaking finding could have a magnum effect on the health of human beings as the bandwidth is rolled out nationwide. The concern is that we develop a lower resistance to bacteria as our cells become more vulnerable – and we become more vulnerable.

Thank you for taking the time to read my concerns and know that others would have the same concerns but many people are not even aware of the 5G rollout and the amount of time allowed for submissions was very short.

Regards,
Grace Baylis

238 Tony Small

I would like to submit on the proposed rollout of the 5G network in New Zealand.

I am against this rollout on the following basis:

Need for Faster Internet.

We already have considerable investment made in providing internet connections through our current systems. Internet in NZ is fast already and I consider we do not need to have much faster connections when there are potential risks involved.

The Safety and Health Aspect.

It is of concern that NZ has NO safety standards for cell phones on the market. No safety testing has been undertaken on the effect this rollout will have on human health. This is high frequencies at low, short-range intensities i.e. a denser electro-smog environment. This needs to be fully tested before exposing the public to this untested technology. The public must be advised as to the potential risks to human health, short and long term.

In particular human skin absorbs radiation, children and elderly could be more at risk. From research carried out on animals, eyes are also damaged with exposure to microwave radiation along with the immune system.

The desire to ignore current limits considered acceptable by NESTF standards and push these out is unacceptable whilst ignoring human health.

Planetary Concerns.

Many environmental risks have been identified as being potentially connected to 5G technology. Many studies show concern for serious health effects to trees, bees, birds and plants and the potential to threaten natural ecosystems. This is a risk too grave to contemplate for what, faster internet speed??

Increase in Number of Cell Towers.

This technology requires many more cell towers within very short ranges of each other. Cell phone usage has already been identified as a potential carcinogen by the WHO. Brain cancer has been linked to cell phone usage. This surely confirms the need to fully test before implementation of 5G.

The 'smart' appliances communicating with towers is totally unnecessary and an environmental danger to humans.

Number of Networks.

It would be irresponsible to allow all 3 networks in NZ to rollout their own 5G networks when this would triple the necessary exposure.

In addition to this, the 1400MHZ network currently used by the Police, Chorus and Airways Corp, would mean replacement of their systems at huge cost! More unnecessary expense for the taxpayer, yet again.

Thank you.

Tony Small
NELSON

244 Wei Han

Wei Han

“5G Consultation”

I oppose implementing 5G before we have solid medical evidence showing that it is biologically safe. It is crucial to carefully study and conduct industry-independent assessment on how the human DNA and cells are affected biologically by the frequency band in the proposed 5G network before it gets rolled out.

I am sensitive to electromagnetic frequencies (EMF), when I am exposed to EMF from electronics such as cell phones, cellular phone base stations, laptops etc. I get a range of symptoms including: muscle aches, skin rash, irregular heartbeat, nausea, insomnia, fatigue and concentration problems. My symptoms disappear when I'm away from the sources emitting EMF.

I have read that authentic medical studies have been done to show that our cells make stress proteins when exposed to EMF (<http://www.physiology.columbia.edu/MartinBlank.html>).

We all know UV rays are dangerous, and Dr. Martin Blank has shown that frequencies at lower energy and lower frequency still interacts with biological tissue and causes damage. These stress proteins are found pretty much across the whole electromagnetic spectrum.

I am most worried about the children; the effects of EMF on their biological tissue are multiplied because children are growing with fast dividing cells. We should take a precautionary stance when it comes to our future generations. We would not lay a newborn baby under the mid-noon sun, similarly we should not implement 5G and expose all born and unborn children to frequencies that have not yet been carefully studied and understood.

Thank you for reading my submission.

Yours sincerely,
Wei Han

249 Patients' Rights Advocacy Waikato Inc.

To whom it may concern,

On behalf of Patients' Rights Advocacy Waikato Inc. we would like to support Katherine Smith of Auckland's detailed submission regarding the proposed implementation of 5G technology in New Zealand.

We note that very little time and advices have been notified by the New Zealand government of this consultation process which has not reached the public in general given that this technology has NO evidence of health and safety studies to prove that it has no health impacts on life itself. This will affect every person's health and especially those who are already electrosensitive in this country and all living things including our bees and our environment.

Again we see our "right to choice" being removed by industry (i.e. telecommunications etc etc) who lobby government seeking to profit from the "business" with no thought given to public safety.

5G is simply unnecessary because internet access in NZ is already acceptable in most areas.

It takes very little effort to see that this 5G technology "unravels our DNA". With this piece of knowledge, this alone should cease any implementation of an unknown hazard.

We see that this technology will increase our already burgeoning health problems in this country with a health system which is in crisis and not servicing our needs. Our health budget is not meeting public need presently.

We expect the cost (to individuals, families and society) of loss of productivity due to illness and treating potential adverse health effects caused by greater utilisation of wireless technologies could end up outweighing any economic benefits of 5G.

We think that NZ should wait to see what health impacts 5G infrastructure and 5G compatible devices may have in other countries where this technology is adopted prior to rushing into adopting what is essentially a technology of (at this stage) unproven safety.

We OPPOSE any implementation and preparation of 5G technology in New Zealand.

We wish to speak to this directive in Hamilton.

Yours sincerely,
Carolyn McKenzie

Chairperson
&
Mischele Rhodes
Vice Chairperson
Patients' Rights Advocacy Waikato Inc.

250 Hamilton Residents & Ratepayers Assn Inc

To whom it may concern,

On behalf of Hamilton Residents & Ratepayers Association Incorporated Inc. we would like to support Katherine Smith of Auckland's detailed submission regarding the proposed implementation of 5G technology in New Zealand.

We note that very little time and advices have been notified by the New Zealand government of this consultation process which has not reached the public in general given that this technology has NO evidence of health and safety studies to prove that it has no health impacts on life itself. This will affect every person's health and especially those who are already electrosensitive in this country and all living things including our bees and our environment.

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We OPPOSE any implementation and preparation of 5G technology in New Zealand.

We wish to speak to this directive in Hamilton.

Yours sincerely,
Mischele Rhodes
President
Hamilton Residents & Ratepayers Assn Inc.

253 Tom Macrae

Tom Macrae <tommopmog@gmail.com>

4:30 PM (7 minutes ago)

<<https://mail.google.com/mail/u/0/images/cleardot.gif>>

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I OPPOSE any implementation and preparation of 5G technology in New Zealand.

Yours sincerely,

Tom MacRae

256 Barry McNair

Comments.

A doubling of cell phone towers in my town or city (or your closest town or city) is something that would concern me from a health perspective. I am electrosensitive & research shows increased cancer rates in people, including young children in schools, living close to cellular infrastructure.

I am concerned about the possible impact on property values in my area if more cellular phone towers are built.

According to the link below, the 5G frequencies cannot travel more than 250 metres which means that areas where 5G uses millimetre wave frequencies will need to have millimetre wave transmitters every 250 metres or less.

http://www.massey.ac.nz/massey/about-massey/news/article.cfm?mnarticle_uuid=2CDCB14D-CEE1-6959-5492-B63AD004AE6D

* That a 5G system in NZ could eventually facilitate 1 million internet connections per square kilometre.

* One million internet connections per square kilometre is ludicrous for a country that has only about 4.5 million people and a low population density.

The huge number of connections could be used to facilitate what has been called the Internet of Things (IoT) in which allows devices to communicate with each other.

(In his lecture in Auckland in 2013, Don Maisch PhD, an expert on standards for electromagnetic radiation described smart meters as a key component of the IoT – his lecture may be accessed via the following link:

<http://www.stopsmartmeters.org.nz/uncategorized/dr-don-maisch-auckland-lecture-now-online/>)

Dr Don Maisch Auckland Lecture Now Online - Stop Smart Meters

<<http://www.stopsmartmeters.org.nz/uncategorized/dr-don-maisch-auckland-lecture-now-online/>>

www.stopsmartmeters.org.nz

Dr Don Maisch (from www.emfacts.com) visited New Zealand in November, and gave three free public lectures on “smart meters” focusing on how “smart meters” and the “smart grid” have a variety of undesirable consequences. His talk included a discussion of “smart meter”-associated health issues. His lecture in Remuera, Auckland was filmed by Vinny Eastwood of

...

It is foolish to expose New Zealanders to the health risks of additional wireless infrastructure to facilitate appliances such as domestic fridge talking a smart meter.

* That multiple 5G networks are being considered for NZ:

Quoting from the discussion document: “New Zealand has sufficient spectrum available for 5G to support the roll out of at least three national networks. All cellular mobile network operators have indicated their desire to build their own 5G network and compete at the infrastructure level. Given this, there would have to be strong public policy reasons to prevent this occurring.”

If 5G is instituted in NZ, it would be better for people’s health to have only one 5G network rather than three (if Spark, Vodafone and 2 Degrees all decide to build their own 5G networks).

* That one of the frequencies being considered as part of the 5G system (1400MHz) is already being used by the NZ Police, Chorus and the Airways Corporation.

Can you imagine the expense to the taxpayer of having to replace all NZ police personal radios and vehicular radio etc. systems? On the face of it, the proposal to use a frequency needed by NZ Police as part of a 5G system is so idiotic that I am surprised it is included on the discussion document.

* That there are no safety standards in NZ for cellular phones!!!

According to the discussion document NZ has NO safety standards for the cellular phones on the market (but allows the importation of any cellular phone that is compliant with any other countries’ regulations) shows a worrying lack of concern for New Zealanders’ health.

It is especially worrying considering the research linking cellular phone use to brain tumours and the fact that according to the documentary Generations

<<https://generationzapped.com/>> Zapped, there was NO pre-market safety testing of cellular phones prior to their introduction to the market.

The Spectrum NZ discussion document does NOT suggest that NZ should do its own pre-market testing of cellular phones that are designed to be compatible with the 5G system.

There are already modems in development that are designed to be used in situations where there is both 4G coverage and millimetre wave coverage.)

Cellular phones that are 4G and 5G compatible would therefore potentially expose users to potentially carcinogenic RFR microwave radiation from the 4G system PLUS millimetre waves.

Based on the short wave length of millimeter waves, the main health concerns at this stage – further research is desirable – appear to be potential adverse effects on the skin and the eyes.

The NZ government should commission safety testing of 5G compatible modems and smart phones and other devices prior to their being marketed in NZ .

All the test data for 5G compatible phones data should be published on a publicly accessible website.

Radio Spectrum Management is “seeking feedback on whether industry considers 5G antenna will comply with the NESTF.”

The NESTF is the “National Environmental Standard for Telecommunications Facilities”.

Under this standard the allowable emissions limit for 5G infrastructure using millimetre waves (or any frequency in excess of 2 GHz to 300 GHz) is 10 million microwatts per square metre (10 w/m²).

New Zealand’s standard for devices that produce RFR in the microwave range is already one of the poorest in the world. In NZ the legal limit for exposures to this type of radiation under NZS2772.1:1999 is much higher than in many other countries. (For example, in China, Italy, Russia and Switzerland, the limit is 10 times lower at 1 w/m².)

NZ has high legal exposure levels despite the fact that RFR in the microwave range is classified as a possible carcinogen (type 2B) by the World’ Health Organisation’s International Agency for Research on Cancer (IARC) and despite the fact that NZ has a high cancer rate.

If NZ’s already lax limits for exposure to RFR in the microwave range are revised upwards because the system proposed for 5G would be likely to exceed the current limit, this could have negative impacts on human health.

I oppose any increase to the allowable public exposure limit for RFR in the microwave range.

I think that 5G is simply unnecessary because internet access in NZ is already acceptable in most areas?

I think that NZ should wait to see what health impacts 5G infrastructure and 5G compatible devices may have in other countries where this technology is adopted prior to rushing into adopting what is essentially a technology of (at this stage) unproven safety?

I think that the cost (to individuals, families and society) of loss of productivity due to illness and treating potential adverse health effects caused by greater utilisation of wireless technologies could end up outweighing any economic benefits of 5G?

B McNair

258 Rosemarie Gutschmann

Rosemarie Gutschmann

Concerned about 5 G technology in NZ

A planned 5G network would likely mean a doubling of cell phone towers in urban areas in NZ, however research has shown increased cancer rates in people living close to cellular infrastructure.

Thus, I certainly would not want to live close to a cell phone tower and no one else should be, due to the impact on human health. Therefore, the question arises, who will be responsible for the many health issues (cancer, fatigue, headaches, insomnia, hyper sensitives etc.) due the 5G technology.

The impact of 5G networks on human health has already been investigated/researched enough and the findings are clear. THE 5 G TECHNOLOGY IS NOT COMPATIBLE WITH THE HUMAN BODY, thus a definite NO to 5G.

Especially, considering that most New Zealanders have acceptable access to the internet via the copper landline system, the fibre optic network being progressively rolled out through the country and/or 4G.

Sincerely,
Rosemarie Gutschmann

Links concerning health issues due to 5 G and wireless technology can be provided

260 Mischele Rhodes

To whom it may concern,

I would like to support Katherine Smith of Auckland's detailed submission regarding the proposed implementation of 5G technology in New Zealand.

I note that very little time and advices have been notified by the New Zealand government of this consultation process which has not reached the public in general given that this technology has NO evidence of health and safety studies to prove that it has no health impacts on life itself. This will affect every person's health and especially those who are already electrosensitive in this country and all living things including our bees and our environment.

Again I see our "right to choice" being removed by industry (i.e. telecommunications etc etc) who lobby government seeking to profit from the "business" with no thought given to public safety.

5G is simply unnecessary because internet access in NZ is already acceptable in most areas.

It takes very little effort to see that this 5G technology "unravels our DNA". With this piece of knowledge, this alone should cease any implementation of an unknown hazard.

I am also appalled to see that there is no safety standards in New Zealand for cellular phones and there is total disregard for public safety!

I see that this technology will increase our already burgeoning health problems in this country with a health system which is in crisis and not servicing our needs. Our health budget is not meeting public need presently.

I expect the cost (to individuals, families and society) of loss of productivity due to illness and treating potential adverse health effects caused by greater utilisation of wireless technologies could end up outweighing any economic benefits of 5G.

I think that NZ should wait to see what health impacts 5G infrastructure and 5G compatible devices may have in other countries where this technology is adopted prior to rushing into adopting what is essential a technology of (at this stage) unproven safety.

I OPPOSE any implementation and preparation of 5G technology in New Zealand.

I wish to speak to my directive.

Yours sincerely,

Mischele Rhodes

261 Tracy Livingston

ATTACHMENTS TO SUBMISSION IN SEPARATE LINKS ON RSM WIEBSITE

I am completely opposed to the 5G roll out in New Zealand.

Please read the attached links that need to be read and understood so you understand why I am opposed to this technology being implemented in New Zealand.

I have serious concerns about health and safety. This is going to be another really really bad idea for us.

Please contact me if you wish to discuss further.

Tracy Livingston

Kia ora

Article about 5G. <https://eluxemagazine.com/magazine/dangers-of-5g/>

You must cease and desist the 5G roll out until a complete health and safety report has been done without industry influence.

Nga mihi nui

Tracy Livingston

263 Tertia Wildy

Once again I have only just found out about this document and the possibility of making a submission.

Looking at the "Preparing for 5G in New Zealand Discussion document" it seems entirely business focused. It is planning ahead as if it is a done deal that this technology is going to happen.

In point 2.2 of your document you have the only point that mentions safety - "managing any potential health effects from increased exposure to non-ionizing radiation." You have made no suggestions other than relying on existing codes that are known to be inadequate, or other countries regulation - which vary widely.

Meanwhile the scientific studies - not only the many recent ones but also going back decades, have shown that wireless radiation is harmful to the health of people, animals and plants - even at low levels.

It has been said that this technology would never be allowed if the appropriate pre-market safety studies had been done. You are now exposing the whole population to this radiation, to a giant medical procedure, without their informed consent. You have no mandate to do any of this.

I, and many people I know do not want to be exposed to the EMF/RFR that is already being used - let alone have it ramped up another level.

A 4G tower was activated in my valley last year and ever since I have felt unwell and my

functioning has been impaired, I feel better when I am out of the area. I have thought of moving but it's hard to have the energy to do so now, and if I find somewhere with low signal strength they may come along and "fix" it and I will be back to square one.

Yet the Industry and the Government act like there is no issue. Who is going to be liable when the health consequences are unable to be swept under the carpet and this "Tobacco Company" behaviour is no longer defensible?

Do you want the burden on the Health System and the lack of productivity that this will result in?

To place the profit of the telecommunications industry so far above the health of the people of this nation is diabolical.

To be truly responsible this Government should have all the necessary funds put into the fibre roll-out, maintaining the copper lines, and educating people to go back to using corded devices. And - Get the Wifi out of schools and public places.

I do not consent the radiation I am exposed to or any increase in it. I will not buy the technology.

Regards,
Tertia Wildy

265 Jordan Kelly

Submitted by Jordan Kelly, Tasman, New Zealand

Submission of Opposition to the Introduction of '5G' Technology into New Zealand

As a New Zealander who suffers the now-officially, internationally recognised disability known as Electromagnetic Hypersensitivity (i.e. World Health Organisation-assigned International Code of Disability, ICD-10-CM W90.8), I vehemently oppose the introduction of 5G into New Zealand.

As a New Zealand citizen, I DO NOT CONSENT to the trespass of this technology upon my person, or upon those streets, areas and facilities where I conduct the business and errands of my life.

To explain Electromagnetic Hypersensitivity (EHS) to those who are not familiar with it: a small but increasing percentage of the population is highly sensitive to Electromagnetic Radiation (EMR), suffering a variety of symptoms (some outward and overt, some less so, but all disabling and some potentially life-threatening) when exposed to levels which are otherwise tolerable to the majority.

Symptoms can differ between individuals, although some symptoms are generally common to all sufferers.

The range of symptoms includes but is not limited to intense brain fog, sharp headaches, tinnitus, blurry vision, nausea, breathing disruption, loss of balance/dizziness, disorientation, slurred and disrupted speech, loss of cognition, through to those symptoms which represent medical emergencies e.g. atrial fibrillation.

The combination of symptoms present in any individual – especially where they include loss of cognition – is generally sufficient to render the individual incapable of any work that involves the need to think and process information.

I therefore vehemently oppose the introduction of 5G into New Zealand, on bases including but not limited to:

- 1) That individuals with Electromagnetic Hypersensitivity will have their conditions worsened (as if their lives are not difficult/nightmarish enough already) and will have large portions of their daily lives compromised by many areas (e.g. suburban, main streets and shopping facilities) rendered inaccessible to them.

Please note that EHS is now recognised by the World Health Organisation with an International Code of Disability. Thus, to cause people with this disability to be denied access to areas, streets and facilities is to deliberately contravene those well-established policies of the New Zealand Government that provide for equal access for all members of New Zealand society.

Further, the numbers of people suffering the condition will increase sharply, which also means the numbers of people requiring financial support from others or from Government agencies will, likewise, increase, as these individuals find themselves unable to continue to maintain their livelihoods.

And also:

- 2) Concerns about the adverse health effects of 5G that have been expressed by numerous doctors and scientists, and that are being expressed by rapidly growing numbers of members of these professions.
- 3) The “We Won’t Wait for the Standards” policy announced by Tom Wheeler, Chairman of the United States’ Federal Communications Commission.
- 4) That the Precautionary Principle is being ignored.
- 5) The fact that 5G is being proposed for introduction without the New Zealand public’s full and educated appreciation that it is a very different technology than preceding generations of cellular telecommunications, and not simply an upgrade of 4G, and also including the fact that this technology was initially developed for military application. Related to this, the manner in which this technology works and its impacts upon living tissue, which – in some instances – requires a knowledge of the highly sophisticated medical discipline of magnetobiology.

If this specialist field of study were understood more widely, it would become immediately apparent that many conditions currently being attributed, in their diagnosis, to other causes or origins are, in fact, being catalysed by the frequencies and intensity of electromagnetic radiation currently in use for existing 4G cellular telecommunications activity and also for what we term “wi fi”.

Politicians cannot be expected to understand these complexities, and those they look to as “advisers” also cannot.

In addition, those looked to as advisers lack both the essential knowledge of such fields of expertise as magnetobiology, and also lack any personal understanding of, or experience with, Electromagnetic Hypersensitivity.

In many instances, they also have vested interests in the telecommunications sector e.g. client-consultant relations.

It is, therefore, incumbent upon any politician or Government operative to take all steps to deeply inform himself or herself of such matters, and ideally, this would involve becoming an expert in such sciences as are essential to understand the full and true range of biological impacts of artificial electromagnetic radiation (EMR), and most certainly the spectrums and type of EMR associated with 5G i.e. millimetre wavelength radiation.

- 6) The fact that vulnerable people, most especially the infirm and children, stand to be gravely impacted in large numbers.

I therefore repeat:

As a New Zealand citizen, I DO NOT CONSENT to the trespass of this technology upon my person, or upon those streets, areas and facilities where I conduct the business and errands of my life.

I will hold those individuals who ignore my DISTINCT NON-CONSENT both morally AND FINANCIALLY responsible (at an individual level) for the impacts upon my health

and functionality, my livelihood, and my general “liveability” in those communities in which I would otherwise circulate.

The tracts below are excerpted from a series of columns I have written for various publications on the coming “5G” public health nightmare.

Below these article excerpts, is my experience as an individual who has suffered extreme Electromagnetic Hypersensitivity (EHS), who is making a slow but steady recovery from the living hell (and financially ruining hell) that is EHS, but who would likely be not only thrust directly back into the darkest days of the EHS experience but possibly, effectively and literally, put to death.

5G is an issue with massive implications for all living beings.

There is a huge depth and breadth of concern that exists – globally – with regard to the impact of 5G on public health.

Yet telcos and governments everywhere are ignoring that concern and hoping the general public does also.

There is a plethora of interviews, presentations, research references and recordings across the internet, and all those *non*-industry-biased sources that I have so far studied are authoritative.

An Ideal Crash Course for Uninformed Decision Makers

Here’s something freshly uploaded to YouTube:
https://www.youtube.com/watch?v=kp0_zGHH3KA.

This particular video is a series of testimonies presented to a Senate committee on Energy & Technology from a wide variety of citizens opposing the proposed roll-out of 5G in the U.S. state of Michigan. All those presenting to the committee are obviously highly educated and deeply informed, both collectively and individually.

This one presentation alone provides an ideal introductory crash course into the massive and exponentially growing concern and opposition to the bull-headed Government and industry push to roll out this dangerously untested new technology without due research or public consultation.

Here's another (there's hundreds on YouTube alone). This one explains the technology (and its extreme dangers) at a more basic level:

<https://www.youtube.com/watch?v=7nCyqMtB4CI>

'5G' Is A Deliberate & Gargantuan Misnomer

Perhaps the next most important point to make is that 5G is a gargantuan (and very deliberate) misnomer. "5G" (5th Generation wireless systems) sounds like simply the next generation up from, and an incremental improvement on, 4G . . . which was an improvement in speed performance over 3G. Not so. (The above YouTube video explains this well.)

5G is a very different technology. It's untested . . . and there have been thousands of (*non*-industry-funded) studies showing significant biological damage even from the far less offensive (but still highly concerning) 4G technology.

5G Is Akin to X-Ray Technology

5G employs "millimetre wavelength" microwave radiation in a very different spectrum of frequency than that to which the human biology has ever been subjected.

In basic terms, it's more intensive, more invasive at the cellular level, penetrating any living organism in a manner more akin to x-ray technology. If I had greater space available to me, I'd go into how living in a 5G world would be like living 24/7 inside a full-body airport scanner.

More than Just A 'Possible Carcinogen'

Again '5G' is not simply some benign upgrade on 4G.

It's what's known as "millimetre wave" technology – and living beings were never meant to be exposed to this type of frequency, much less be bathed in it, the way we will be if the out-of-control telcos and their Government lapdogs have their way (as they fully intend to do).

As far back as 2011, the World Health Organisation (WHO) classified radio frequency radiation as a "possible carcinogen" . . . and that was only because they were forced to admit it was at least that. In reality, it's more than just a "possible carcinogen".

A \$25 million study known as the National Toxicology Program concluded that radio frequency radiation of the type currently used by cell phones can cause cancer (and we can well consider that a similar degree of understatement).

Again, "5G" takes this to a whole new level. A level of exponentially increased electrosmog density, and exponentially increased dangers from a spectrum of frequencies that telecommunications companies don't possess the medical / scientific expertise to understand. Nor do they possess the will to allow such an understanding to stand in the way of their commercial gain, even if they did.

Some of the effects the *non*-corporately-funded scientific community foresees include (but again, are not limited to) effects on the skin (skin diseases, cancer and physical pain), effects on the eyes including cataracts (the Medical Research Institute of Kanazawa Medical University found that "*millimetre wave antennas can cause thermal injuries of varying types of levels. (The thermal effects induced by millimetre waves can apparently penetrate below the surface of the eye)*"), effects on the heart, effects on the immune system, effects on cell growth rates, as well as massive effects on animal, bird, insect and plant life."

Industry-Funded 'Testing' is Bogus

Those industry interests that are belatedly carrying out research (they've already begun rolling out the technology anyway) into "5G" are largely bogus.

Why? Because 5G will use *pulsed* millimeter waves to carry information. But these studies are not *pulsing* the waves of radiation being emitted. It's a critical difference designed to skew results. Existing (non-industry) research on microwaves demonstrates that pulsed waves have more profound biological effects than do non-pulsed waves, and include, for example, strand breaks in DNA.

Serious stuff. This DNA strand breakage is also what full-body airport scanners do (don't believe for one moment, the intelligence-insulting propaganda handed to you at airports, claiming that the radiation they're subjecting you to is less than a few calls on a cell phone, or the likes).

In defence of their positions, telecommunications interests will tell you that "anything we intend to roll out will comply with Government / industry standards".

Not only are any Government and industry standards relating to Electromagnetic Radiation very out of date, they're woefully inadequate on many fronts, including the fact that they were largely produced by the industry to start with.

5G: 'We Won't Wait for the Standards'

Educated readers will have surely begun conducting their own research by now. But they'd be well-advised *not* to seek it from a telecommunications company, nor from any Government agency – all of which will simply tell you they'll be "complying with industry / Government standards".

Let's dismantle that one. Firstly, the international standards (i.e. of the International Commission on Non-Ionising Radiation Protection) have been in existence, unchanged, since 1998. Think of the enormous evolution in technology in the two decades that have since elapsed.

They also relate only to thermal effects, *not* to non-thermal effects, where the real concern lies. In other words, these antiquated standards are useful only in making sure a cell phone doesn't actually physically burn the side of your head.

Need More Evidence of Recklessness towards Public Health?

If any reader requires evidence that Government regulators are in the pockets of industry, they need look no further than the United States' Federal Commission of Communications (FCC, supposedly an industry regulatory body) chairman, Tom Wheeler, announcing the imminent roll out of 5G at a June, 2016 National Press Club event: <https://www.youtube.com/watch?v=Bwgwe01S1Mc>

Wheeler became the FCC chairman in 2013, after three prior decades as a venture capitalist and lobbyist for the wireless and cable industries, during which time he also served as President and CEO of the both the National Cable Television Association and the Cellular Telecoms Industry Association.

In this ominous coverage, you'll witness him fairly wetting his trousers with excitement at how "*brilliant engineers have developed new antennas that can aim and amplify signals*" and admonishing any prospective opponents of his industry's agenda to "*stay out of the way of technological development.*"

To continue quoting this extraordinarily arrogant individual as he continues to demonstrate how he intends to run roughshod over all health concerns in the pursuit of massive profits for his industry:

"To make this work, the 5G build-out is going to be very infrastructure intensive, requiring massive deployment of small cells. I'm confident that the actions will lead to a cornucopia of unanticipated, innovative uses and will generate tens of billions of dollars in economic activity. AND THAT'S. DAMN. IMPORTANT. Because it means that U.S. companies will be the first out of the gate.

"Unlike some countries, we do not believe that we should spend the next couple of years studying what 5G should be or how it should operate. The future has a way of inventing itself. Turning innovators loose is far preferable to expecting committees and regulators to define the future. We won't wait for the standards."

What the (non-industry, non-Government) health experts are saying about '5G':

According to Professor Trevor Marshall, Director of the California-based Autoimmunity Research Foundation:

"The new 5G wireless technology involves millimeter waves (extremely high frequencies) producing photons of much greater energy than even 4G and WiFi. Allowing this technology to be used without proving its safety is reckless in the extreme, as the millimeter waves are known to have a profound effect on all parts of the human body."

Shortly after the FCC's announcement of the impending 5G roll-out, the Global Union Against Radiation Deployment from Space (GUARD) wrote to the FCC assuring them in no uncertain terms that 5G *will* inflict considerable harm on the population at large, providing an abundance of research results: "5G violates Article 3 of The UN Declaration of Human Rights which states that 'everyone has the right to life, liberty and security of person'."

Below is an insightful commentary into my own life as a sufferer of Electromagnetic Hypersensitivity (EHS).

Phenomenally Disabling & Disenfranchising Impacts Upon Individuals Who Suffer Electromagnetic Hypersensitivity

I am an individual who suffers extreme electro-hypersensitivity (EHS) and electromagnetic hypersensitivity.

Notwithstanding the endeavours of telecommunications and utility corporations' personnel, their hired lobbyist services, medical fraternity shills (and/or those who are simply insufficiently informed and arrogant) to paint the condition as "psychosomatic", it is in fact a very REAL, very debilitating, and very socially isolating condition.

In fact, it has for quite some time been provided for by more compassionate and progressive countries such as Sweden, which provide special protective accommodation for those diagnosed with EHS.

The condition's symptoms (when suffered to the extreme degree to which I have been affected) include, but are certainly not limited to:

Gross cognitive impairment, speech pattern interruption, intense brain fog (a term grossly insufficient to describe the intensity of this symptom), short-term memory loss, complete inability to hold concentration or mental focus, dizziness and loss of balance, physical disorientation, facial changes, excessive sweating, extreme energy depletion (to the point of, at times, being unable to continue standing), stiffness and mobility impairment.

Heart palpitations, arrhythmia, and atrial fibrillation (for which I have been hospitalised twice) are also regular occurrences upon exposure to strong fields of wi fi / electromagnetic pollution and radio frequencies.

As a self-employed consultant, I rely on a well-equipped office, and most especially a landline phone and safe, landline-transmitted internet for business activities and income generation. So, added to the logistical consequences of geographic and social isolation,

being challenged by hypersensitivity to the phenomenal increase in environmental electromagnetic pollution brings with it very material economic consequences.

Like many other EHS sufferers around the world (along with a small but expanding number in New Zealand), I have been forced to leave my own, mortgage-free home and seek "refuge" in the rapidly reducing number of low-EMF locations left around New Zealand (all the while trying to continue my self-employed consultancy business). That took place in June, 2017.

Before being reduced to such a radical measure, I had spent upwards of \$100k on special EMF-shielding paint and curtaining (imported from Germany) and the conversion of a garage to a studio (to locate my office area as far as possible from the road and motorists with cell phone calls in-progress, each one causing a disturbing intensity of heart palpitation).

I had also been forced to buy the neighbouring property when the owners had a smart meter installed, this having made an entire side of my house (which included my kitchen) uninhabitable for me, and forcing me to rely on friends and paid carers to bring me my daily meals out in my work studio. However, following the installation of the smart meter and the time that had elapsed before I finally bought the property and was able to have this device removed, I had - as it turned out - already reached a whole new level of sensitivity.

It was at this point, that I was forced to abandon both houses and purchase a van, which I then lived in, in roadside reserves with my two dogs, like a vagrant. (It was also a very difficult set of circumstances for a not-particularly-manually-skilled, single woman without the ability to use a cell phone.

Being stuck with a flat tyre in the deep countryside, in snow, with a flat tyre, and passing motorists refusing to stop to help, is no fun. My only available, regular form of communication with the outside world was via an ethernet internet connection at a small video store in Motueka, to which I had to travel one hour each way.)

Having now given up on ever being able to live in a town environment again and thus having sold both my houses, and with my worldly possessions stored in shipping containers in a storage yard, I am now renting a temporary canvas structure on a rural property in the Tasman area.

If 5G were introduced, not only would large portions of communities become inaccessible to me (e.g. I would have to pay someone to conduct my personal administration and my shopping), my life span would almost certainly become materially shortened if I were forced to be immersed in the intensity and type of millimetre wave frequency of 5G.

Thus, it is my intention to take two actions should 5G be introduced into our country:

- 1) As a multiple-times published author, I will write, self-publish and internationally promote a book on my life as an EHS sufferer, and personally name every individual involved in any decision or activity that brought 5G into our country.

This will include naming **ANY AND ALL POLITICIANS** who voted in favour of its introduction.

- 2) I will take legal action against all those parties included in (1), at a level of **INDIVIDUAL CULPABILITY** for the life-threatening circumstances in which their decisions and actions have placed me.
I will also garner the involvement in this legal action, of the rapidly increasing numbers of other EHS sufferers who will suffer further at the hands of those individuals' voting in favour of this move.

Meantime – and notwithstanding the fact that EHS is now a WHO-recognised official disability – for the benefit any committee member sufficiently influenced by the telcos' lobbyist activities (which include industry-sponsored "research" based on flawed methodologies, whether through intent or ignorance) to discount the reality of electromagnetic hypersensitivity, I am prepared to submit (although not for public online posting) a variety of medical certificates, including records of my atrial fibrillation-related hospitalisations.

I would also encourage any reader unable or unwilling to accept the reality of the EHS condition to (1) conduct their own research into the massive increase in electromagnetic pollution in the past decade, and to consider whether or not it is realistic to expect the human biology, in all cases, to have had the opportunity to adapt itself, at the cellular level, to these new environmental conditions, and (2) to consider whether their own ignorance changes my (or others') realities.

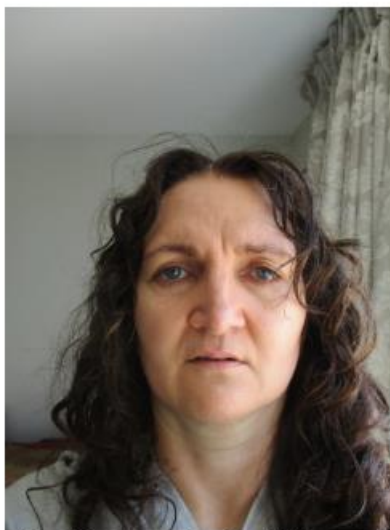
I would also like to make these further comments:

- 1) I earn my living as a self-employed consultant in competitive corporate strategy work. For this work, I obviously rely on full and unimpaired cognitive ability. Currently, I am reduced to working within those windows of time when I have this. The condition is not only financially debilitating and reputationally erosive, but also demoralising in the extreme (both personally and professionally).
- 2) **Whilst the percentage of the population so-affected by cellular technology e.g. wi fi and other EMF sources is, at this point, still very small, that does not make us dispensable.**

We still deserve not only to be allowed to continue living, but also to have some quality of life. If 5G invades our communities, our numbers will increase materially and quickly.



Myself, before EHS.



Myself, two months after EHS started.

Backgrounder Resources:

By way of a quick "snapshot" education / familiarisation process regarding the issue of electromagnetic pollution and health-endangering radio frequencies, I provide the following backgrounders.

- 1) World Health Organisation Former Director General Declares Her Own EHS, Warns Public of EMF Dangers

<http://www.stralskyddsstiftelsen.se/2015/08/former-who-director-general-gro-harlem-brundtland-no-doubt-there-are-health-effects-from-mobile-phone-radiation/>

A 2015 newspaper interview with electrohypersensitive former Director General of the UN World Health Organisation (WHO) and former Prime Minister of Norway, Gro Harlem Brundtland, in which she vehemently encourages the public to protect themselves against the radiation from wireless technology:

Note that the article also unveils the fact that an earlier "EMF (research) Project" was partly funded by the mobile phone industry, while the electricity industry (drivers of the "smart meter" agenda) was invited to participate in a critical assessment of the health risks from low-frequency magnetic fields. (The WHO's assessment of tobacco-related health risks was, similarly, influenced and undermined by the tobacco industry.

From WHO's own subsequent report on tobacco interests' infiltration: *"Tobacco companies have operated for many years with the deliberate purpose of subverting the efforts of the World Health Organization (WHO) to control tobacco use. The attempted subversion has been elaborate, well financed, sophisticated, and usually invisible."*

This article exposes how the same underhanded activity is being perpetuated, this time, by telecommunications and utilities corporations, on the issue of Electromagnetic and Radio Frequency dangers to the public.

2) Impacts of Electromagnetic Radiation on the Human Body

<https://www.youtube.com/watch?v=z2Mt00xY8eU>

A compelling, layman-style, graphically supported explanation of the biological impacts of electromagnetic frequencies and radio frequencies by medical doctor and qualified researcher, Dr Darren Schmidt.

Whilst there are available, many peer-reviewed research papers and presentations by highly credentialed, highly credible medical doctors and researchers, I have chosen to include this one with my submission due to its easily consumable length (22 minutes) and cogent breakdown and explanation of otherwise scientifically complex issues.

Note especially, the telling graphs of Dr Schmidt's hands-on research into the immediate impacts on the nervous system of cordless phones (9.40 minutes in), wif fi exposure (at 18 minutes in), and cell phone radiation (20 minutes in).

3) TEDX Talk: 'Wireless Wake-Up Call'

<https://www.youtube.com/watch?v=F0NEaPTu9oI>

A Silicon-valley engineer turned technology health advocate, Jeremy Johnson discusses our attachment to technology and the health hazards such an addiction may hold.

Jeremy Johnson is an expert in mitigating the negative impacts of Electromagnetic Field (EMF) exposure. He has a leading website on the topic and consults with individuals, families and organizations around the world to implement solutions that reduce and eliminate EMF pollution.

Jeremy has an advanced degree in Civil Engineering and has worked in Silicon Valley for 15 years.

After becoming what medical doctors call "Electro-hypersensitive" (EHS) in 2011 after extensive exposure to EMF radiation, he embarked on a journey of regaining his own health and educating others to critically evaluate theirs.

4) Wifi, Microwaves and the Consequences to our Health - Barrie Trower

https://www.youtube.com/watch?v=z99_SzoXZdY

A British physicist who was a microwave weapons expert who worked for the Royal Navy and the British Secret Service.

In this, one of many of his talks about the health effects of WiFi and other forms of microwave radiation.

5) "The truth about mobile phone and wireless radiation" -- Dr Devra Davis
The University of Melbourne

<https://www.youtube.com/watch?v=BwyDCHf5iCY>

Dr Devra Davis is an internationally recognised expert on electromagnetic radiation from mobile phones and other wireless transmitting devices. She is currently the Visiting Professor of Medicine at the Hebrew University Hadassah Medical School, and Visiting Professor of Medicine at Ondokuz Mayıs University, Turkey.

Dr Davis was Founding Director of the Center for Environmental Oncology at The University of Pittsburgh Cancer Institute — the first institute of its kind in the world, to examine the environmental factors that contribute to the majority of cases of cancer. In 2007, Dr Devra Davis founded nonprofit Environmental Health Trust to provide basic research and education about environmental health hazards.

Dr Davis served as the President Clinton appointee to the Chemical Safety and Hazard Investigation Board in the U.S.A. from 1994–1999, an independent executive branch agency that investigates, prevents and mitigates chemical accidents. As the former Senior Advisor to the Assistant Secretary for Health in the Department of Health and Human Services, she has counseled leading officials in the United States, United Nations, European Environment Agency, Pan American Health Organization, World Health Organization, and World Bank.

Dr Davis holds a B.S. in physiological psychology and an M.A. in sociology from the University of Pittsburgh, 1967. She completed a PhD in science studies at the University of Chicago as a Danforth Foundation Graduate Fellow, 1972 and a M.P.H. in epidemiology at the Johns Hopkins University as a Senior National Cancer Institute Post-Doctoral Fellow, 1982. She has authored more than 200 publications and has been published in Lancet and Journal of the American Medical Association as well as the Scientific American and the New York Times. Dr Devra Davis is an internationally recognised expert on electromagnetic radiation from mobile phones and other wireless transmitting devices.

6) 'I Am An EMF Refugee'

<http://magazine.nd.edu/news/i-am-an-emf-refugee/>

"A day in the life of" a real-world, genuine, sufferer of extreme Electromagnetic Hypersensitivity.

Note: In my accompanying print-out of the article, I have included the lengthy and insight-producing Comments section, which includes supportive comments from medical practitioners as well as from other obviously genuine EHS sufferers.

Note three comments in particular:

"Why don't you try searching for 'microwave sickness naval radar' and you will find what the military has known for years about what we are now calling EHS. Same basic thing early radar operators fell sick with."

"There is well-established scientific evidence that (these) are real, physical illnesses, as there is also for electrical hypersensitivity. Please read Dr Martin Pall's book, 'Explaining Unexplained Illnesses'. He is Professor Emeritus of Biochemistry and Basic Medical Sciences at Washington State, with 99 published peer-reviewed papers."

"There's a documentary called 'Resonance: Beings of Frequency' that you might find interesting. You might be interested in Barry Trower's Youtube videos. He is a British Physicist, who worked for the Royal Navy on electromagnetic weaponry."

Feedback on Discussion Document on 5G by Katherine Smith

Thank you for the opportunity to give feedback on the Discussion Document on the proposed introduction of 5G to New Zealand.

I would like to focus my comments on the following questions:

Q3. *What regulatory issues need to be considered from a 5G perspective in New Zealand?*

and

Q4. *What aspects of these regulatory issues are most significant for 5G?*

New Zealand's current regulatory environment favours the interests of telecommunications companies at the expense of ordinary New Zealanders who may suffer adverse health effects and/or economic losses due to the permitted activities of telecommunications companies.

A prime example of this is the fact that under the National Environmental Standard for NESTF Telecommunications Facilities (NESTF), provided that the emissions for infrastructure will comply with the limits set out under NZS2772.1:1999, cellular phone infrastructure may be legally installed on the roadside reserve in urban areas in close proximity to homes, early childhood centres and schools and businesses, including health care facilities.

Except in exceptional circumstances, people who live and work in the area of planned new cellular phone infrastructure, who may be concerned about the impact of this infrastructure on their property values, customers' perceptions of their environment and/or their own or their customers'/clients' health effectively have no legal grounds for objection to the installation of this infrastructure.

This situation, in which neighbours of planned sites for telecommunications facilities have virtually no chance to successfully object to cellular phone infrastructure being placed in areas which will entail high exposure for particularly vulnerable populations such as pregnant women and young children, was not always the case in NZ. The rights of communities used to be better protected; however, since legislation passed in the last year of the previous Labour-led government, the interests of telecommunications companies have been favoured over neighbours' rights to object. (See: <http://www.stopsmartmeters.org.nz/latest-news/new-zealands-emr-regulations-sufficient-protect-public-health/>)

The proposed 5G system would admittedly require a doubling of 4G infrastructure in urban areas of NZ given that the 4G infrastructure is proposed to serve as a "control layer" for the 5G network.

If the proposed 5G system is allowed to proceed, many more New Zealanders will be living in close proximity to 4G infrastructure due to the proposed doubling of the towers/installations.

The same NESTF that governs cellular phone infrastructure would apply to small cells that emit millimetre wave frequencies that are proposed for use in the 5G system. This would mean that people whose homes or workplaces are in very close proximity to this transmission network would have no ability to make effective objections either.

Also, according to a Massey University scientist who has been doing work on 5G, the limit for transmission of millimetre wave frequencies being tested is only 250 metres, this could mean that “small cells” emitting millimetre wave frequencies could be placed as close as every 250 metres. (In practice, given that many urban environments in NZ are hilly and street trees are a common feature in urban NZ, to maintain an optimal 5G network millimetre wave transmitters may need to be positioned even closer together than 250 metres.)

This represents a whole new level of imposition of wireless radiation into the New Zealand urban environment.

Health effects of non ionising radiation

It is important to note that while New Zealand has a standard governing non ionising radiation, NZS 2772.1:1999 is not designed for comprehensive health protection. Devices that comply with this standard should not produce electric shocks nor cause thermal injury (burns). NZS2772.1:1999 was developed in collaboration with the NZ telecommunications industry. <http://www.stopsmartmeters.org.nz/latest-news/new-zealands-emr-regulations-sufficient-protect-public-health/>

The standard also reflects the state of knowledge about non ionising radiation at the time that it was developed.

Since 1999, there has been a lot more research on the adverse health and biological effects of radiofrequency radiation (RFR) in the microwave range (such as emitted by cellular phone infrastructure.)

RFR in the microwave range was classified as a possible carcinogen (Class 2B) in 2011. More recent research including animal studies performed by the US National Toxicology has led to the call for RFR in the microwave range to be reclassified as a human carcinogen. (See: <https://ehtrust.org/cancer-expert-declares-cell-phone-wireless-radiation-carcinogenic-humans/>)

To my mind, it speaks volumes about the power of the telecommunications industry in the USA that it has taken several decades after the introduction of cellular phones before basic animal tests have been conducted to assess whether or not the form of non ionising radiation produced by cellular phones (and associated infrastructure) is safe. (Unfortunately, the evidence now suggests that it is NOT safe; in the interim, millions of people have assumed that cellular phone use is safe and accumulated many hours of exposure. Many will have had sufficient exposure to put them at risk of developing a brain tumour.)

In addition to evidence of increased risks of some cancers in users of cellular (and cordless) phones, residence close to cellular phone infrastructure has been associated with increased risk of cancer in some studies, for example <https://www.ncbi.nlm.nih.gov/pubmed/21741680>

(The highest exposure documented in this study is lower than the limit allowed under NZS2772.1:1999.)

People who are concerned about the proliferation of wireless infrastructure have good reasons to be concerned, in my opinion.

Specific health concerns about millimetre waves

There is comparatively little data about the biological effects of millimetre waves.

What data is available at this point of time suggests that there is potential for adverse effects to the skin and to the eyes.

To my mind, such papers raise issues of the potential safety risks of “wearable tech” that is

configured to produce millimetre waves and also the potential safety risks of cellular phones that produce millimetre waves, especially when people hold phones close to their face to read small text or watch videos and/or talk with the phone on speaker phone.

In these situations, the eyes would be exposed at close range to the millimetre waves (as well as RFR in the microwave range from the 4G and high intensity blue light from LEDs.)

Electrohypersensitivity (EHS) issues

People who have electrohypersensitivity (also variously known as electrosensitivity, electromagnetic hypersensitivity and Electromagnetic Field Intolerance Syndrome) develop a variety of unpleasant symptoms if they are exposed to levels of electromagnetic radiation that most people can tolerate without overt symptoms. In some cases, symptoms can be life threatening (for example, cardiac arrhythmias). Symptoms can occur in environments where a certain level of EMR is present regardless of whether or not the person is aware of the source of the EMR.

Recent research shows abnormal functional MRI scans (fMRI) in people who have become electrosensitive after long term exposure to electromagnetic fields. (For example, the condition may develop in people who have lived in close proximity to a cellular phone tower and/or those who have been heavy users of cellular phones.) The paper also reports that prior head injury and/or exposures to neurotoxic chemicals may be risk factors for developing electrosensitivity.

<https://www.ncbi.nlm.nih.gov/pubmed/28678737>

Understandably, people I know who suffer from this condition do not believe that instituting 5G in New Zealand is in their best interests. They are concerned that the proposal to increase the number of cellular phone towers in urban NZ and introduce new infrastructure emitting millimetre waves could exacerbate their symptoms and/or cause more New Zealanders to develop this distressing condition.

If you know little about electrosensitivity, reading the following links will give you some basic information about this condition as well as some idea of what it is like to live with such a pervasive but (to most other people) invisible disability.

<http://www.stopsmartmeters.org.nz/science/a-helpful-paper-on-electromagnetic-sensitivity-by-dr-mallery-blythe/>

<http://www.stopsmartmeters.org.nz/latest-news/what-is-it-like-to-live-with-electrohypersensitivity-ehs-one-womans-story/>

<http://www.stopsmartmeters.org.nz/latest-news/electrohypersensitivity-a-short-film-by-time-magazine-free-to-watch-online/>

<http://www.stopsmartmeters.org.nz/latest-news/retired-ceo-speaks-out-on-electrosensitivity/>

Recommendations:

☒ The situation with NESTF which allows telecommunications companies to irradiate communities without their consent with potentially carcinogenic frequencies is manifestly unjust and needs to be reformed.

☒ I recommend that New Zealand does not rush to adopt 5G technology. It is not necessary given that the existing copper phone lines, fibre and 4G wireless provide an acceptable level of internet access in most parts of New Zealand.

269 Katherine Daczo

To whom it may concern,

Please do not let 5G into NZ, the health effects are detrimental to humans. Where are the long term studies showing it is safe?

The 5G waves are blocked by trees, which means a lot of trees are going to be cut down and there will be a huge increase in cell towers. Our towns will look like prison yards and we will be subjected to huge amounts of microwave energy.

The 5G frequency effects the oxygen molecules ability to enter cells. Even cell needs oxygen to support life! This is actually scary technology that should not be unleashed upon our country.

I don't want my name to be on public records.

Katherine

270 Frances Bohm

Submission re "Preparing for 5G in NZ".

From Frances Bohm

I am writing this as one person in most likely very many – who is in fact very highly electro-sensitive.

I have a medical certificate in the meter box at our residence – saying no SMART meter is allowed here. I cannot even hold my old cellphone for very long without it affecting me – it's 3G. I work with elderly people and they are now getting 3G medical alarms – and this has an obvious affect on them

As well as me, I cannot work near cellphone towers – this has been this way for a long time – causing my heart to vibrate – losing blood flow to hands – and makes many different noises in my head. I cannot be where Wi-Fi is on – so I ask what would 5G be like?

I put it to you that many people will suffer badly if this rolls out.

Apologies for this being so brief – am running out of time.

271 LA Savage

1. I DO NOT WANT 5G IN NZ AT ALL, MAINLY FOR HEALTH REASONS.

5G network is likely to mean a doubling of cellular phone towers in urban areas of NZ.

2. The frequencies described as “millimetre wave” frequencies are being considered as part of a 5G system for NZ. This is dangerous for human health.

What we currently have now is working fine.

A 5G system in NZ could eventually facilitate 1 million internet connections per square kilometre. We do not need this amount of connections in our country.

3. If 5G is instituted in NZ, it would be better for people’s health to have only one 5G network

4. 5G is not good for our childrens health and therefore I am against it being made available in NZ.

Cancer rates are already high enough. DNA DAMAGE FROM FREQUENCIES USED WITH 5G is something I DO NOT WANT FOR THE NEXT GENERATIONS.

DNA DAMAGE THAT IS IRREVERSIBLE AND INTER-GENERATIONAL IS A RISK TOO HIGH TO TAKE BY BRINGING 5G to NZ.

5. The frequencies being considered as part of the 5G system (1400MHz) is already being used by the NZ Police, Chorus and the Airways Corporation. The expense to the taxpayer of having to replace all NZ police personal radios and vehicular radio systems are a cost I do not want NZ taxpayers to have to cover.

6. The fact there are no safety standards in NZ for cellular phones and the 5G technology is another reason I do not want 5G at all in NZ.

272 Maree O'Sullivan

Hi,
Submission from :
Maree O'Sullivan

I have heard that you are looking to add another layer of cell phone infrastructure which is 5G. I would like you to consider that some people including myself are sensitive to radio frequencies. Adding more to the infrastructure will affect everyone and especially people like me and possibly everyone to some degree.

I have trouble sleeping and find I am in a cognitive haze when subjected to a lot of these radio frequencies, including cell phones, which we switch off at night and the smart meter in our house (which has now been removed.) Once the smart meter was removed I also saw a behavioural change in my son, as he was able to think clearer, do what was asked and sleep through the night. And I feel the change in myself, being able to function normally again.

The current 4 G system seems to work well and the need to add towers every 250 metres is very concerning to me. Isn't it overkill to enable internet access for 1 million users per 1km? Once installed (placement out of our control), how will we ever be able to turn these off or have any control over the environment that we are living and working in?

I do feel that these emissions affect my health significantly. To the point of feeling exhausted and having difficulty working. Perhaps waiting to see the effects of these systems in other counties will be a good idea or limiting new infrastructure to the minimal levels required.

Regards
Maree O'Sullivan

Maree O'Sullivan

I think more wireless radiation unleashed on people and our environment would NOT be a good thing.

Here is a reference from scientists who are also alarmed at what is intended.

<http://scientists4wiredtech.com/what-are-4g-5g/5g-wavelengths-from-blankets-to-bullets/>

I am very concerned with regards to the harmful health effects on the people everywhere.

Thank you,
Maree

275 Heike Ngan

Dear Sirs/Madams

I write to submit my objection to the use of 5G as a reason to improve internet connectivity when it is in fact unnecessary and is being rolled out without proper investigation by our elected members who may not understand the devastating effects microwave technology has on ALL living organisms when broadcast across our airspace. Please find attached

documentary from a respected scientist to support my grave concerns, which should be yours as well.

Thank you.
Heike Ngan

<https://youtu.be/-2DSKl1ts0w>

Sent from my iPhone

277 Isabel Hutchinson

I am concerned that existing 4G cellular phone infrastructure is likely to be initially be used as a “control layer” for a planned 5G network and that this is likely to mean a doubling of cellular phone towers in urban areas of NZ.

There is increasing information concerning the dangers to health of all creatures from electro-magnetic radiation.

I am already sensitive to electro-magnetic radiation and cannot e.g., spend more than a short time in any of Auckland City Libraries or any shopping centre where wi-fi prevails.

That frequencies described as “millimetre wave” frequencies are being considered as part of a 5G system for NZ.

According to the link below, these frequencies cannot travel more than 250 metres which means that areas where 5G uses millimetre wave frequencies will need to have millimetre wave transmitters every 250 metres or less.

<http://www.massey.ac.nz/massey/about-massey/news/article.cfm?mnarticle_uuid=2CDCB14D-CEE1-6959-5492-B63AD004AE6D>
http://www.massey.ac.nz/massey/about-massey/news/article.cfm?mnarticle_uuid=2CDCB14D-CEE1-6959-5492-B63AD004AE6D

That a 5G system in NZ could eventually facilitate 1 million internet connections per square kilometre.

I think that one million internet connections per square kilometre is ludicrous for a country that has only about 4.5 million people and a low population density. (In his lecture in Auckland in 2013, Don Maisch PhD, an expert on standards for electromagnetic radiation described smart meters as a key component of the IoT – his lecture may be accessed via the following link: <http://www.stopsmartmeters.org.nz/uncategorized/dr-don-maisch-auckland-lecture-now-online/>)

I think that it is foolish to expose New Zealanders to the health risks of additional wireless infrastructure to facilitate appliances such as domestic fridge talking a smart meter,

Quoting from the discussion document: “New Zealand has sufficient spectrum available for

5G to support the roll out of at least three national networks. All cellular mobile network operators have indicated their desire to build their own 5G network and compete at the infrastructure level. Given this, there would have to be strong public policy reasons to prevent this occurring.”

I think that if 5G is instituted in NZ, it would be better for people’s health to have only one 5G network rather than three (if Spark, Vodafone and 2 Degrees all decide to build their own 5G networks).

That one of the frequencies being considered as part of the 5G system (1400MHz) is already being used by the NZ Police, Chorus and the Airways Corporation.

Can you imagine the expense to the taxpayer of having to replace all NZ police personal radios and vehicular radio etc. systems? On the face of it, the proposal to use a frequency needed by NZ Police as part of a 5G system is so idiotic that I am surprised it is included on the discussion document.

*

That there are no safety standards in NZ for cellular phones!!!

According to the discussion document NZ has NO safety standards for the cellular phones on the market (but allows the importation of any cellular phone that is compliant with any other countries’ regulations) shows a worrying lack of concern for New Zealanders’ health.

It is especially worrying considering the research linking cellular phone use to brain tumours and the fact that according to the documentary Generations Zapped, there was NO pre-market safety testing of cellular phones prior to their introduction to the market.

The Spectrum NZ discussion document does NOT suggest that NZ should do its own pre-market testing of cellular phones that are designed to be compatible with the 5G system.

There are already modems in development that are designed to be used in situations where there is both 4G coverage and millimetre wave coverage.)

Cellular phones that are 4G and 5G compatible would therefore potentially expose users to potentially carcinogenic RFR microwave radiation from the 4G system PLUS millimetre waves.

Based on the short wave length of millimetre waves, the main health concerns at this stage – further research is desirable – appear to be potential adverse effects on the skin and the eyes.

I think that the NZ government should commission safety testing of 5G compatible modems and smart phones and other devices prior to their being marketed in NZ .

I think that all the test data for 5G compatible phones data should be published on a publicly accessible website.

That Radio Spectrum Management is “seeking feedback on whether industry considers 5G antenna will comply with the NESTF.”

The NESTF is the “National Environmental Standard for Telecommunications Facilities”.

Under this standard the allowable emissions limit for 5G infrastructure using millimetre waves (or any frequency in excess of 2 GHz to 300 GHz) is 10 million microwatts per square metre (10 w/m²).

New Zealand’s standard for devices that produce RFR in the microwave range is already one of the poorest in the world. In NZ the legal limit for exposures to this type of radiation under NZS2772.1:1999 is much higher than in many other countries. (For example, in China, Italy, Russia and Switzerland, the limit is 10 times lower at 1 w/m².)

NZ has high legal exposure levels despite the fact that RFR in the microwave range is classified as a possible carcinogen (type 2B) by the World’ Health Organisation’s International Agency for Research on Cancer (IARC) and despite the fact that NZ has a high cancer rate.

If NZ’s already lax limits for exposure to RFR in the microwave range are revised upwards because the system proposed for 5G would be likely to exceed the current limit, this could have negative impacts on human health.

I oppose any increase to the allowable public exposure limit for RFR in the microwave range this would be a good point to include in a submission.

I think that 5G is simply unnecessary because internet access in NZ is already acceptable in most areas.

I think that NZ should wait to see what health impacts 5G infrastructure and 5G compatible devices may have in other countries where this technology is adopted prior to rushing into adopting what is essentially a technology of (at this stage) unproven safety.

I think that the cost (to individuals, families and society) of loss of productivity due to illness and treating potential adverse health effects caused by greater utilisation of wireless technologies could end up outweighing any economic benefits of 5G.

I. Hutchinson.

????CHA????????

278 Angus Craig

This is worth a listen. DR Barry Trower

<https://www.youtube.com/watch?v=YwihgqjFbXc>

<http://geopathology-za.wikidot.com/barrie-trower>

On Mon, May 7, 2018 at 8:59 PM, Angus Craig <angusactingupagain@gmail.com> wrote:

<https://www.telegraph.co.uk/> <<https://www.telegraph.co.uk/science/2018/05/02/mobile-phone-cancer-warning-malignant-brain-tumours-double/>> science/2018/05/02/mobile-phone-cancer-warning-malignant-brain-tumours-double/

<https://www.telegraph.co.uk/science/2018/05/02/mobile-phone-cancer-warning-malignant-brain-tumours-double/>

Have been made aware of the submission date on 5G late today I would like to briefly state that I am opposed to 5G's rollout due to Health concerns.
my reasons being.

- 1.DNA damage
- 2.EMF sensitivity
- 3.The lack of the public's choice to have these frequencies invading peoples homes and there bodies without consent. NZ human right Act
4. Lack of Proven safety studies.

Electromagnetic fields and radiation damage DNA has been researched in the passed by New Zealand's own late Dr Neil Cherry . please see his site listed here.<http://neilcherry.nz/index.html>

YOURS SINCERLEY
Angus Craig

279 Sandra Cooke

From S.Cooke
Preparing for 5G in New Zealand

It is said that 5G is the next generation of wireless communications that is designed to give faster download speeds than what is possible with the 4G network currently available in much of NZ.

Unfortunately, moving to a 5G system would entail increased exposure to wireless radiation for most New Zealanders.

5G is simply unnecessary because internet access in NZ is

already acceptable in most areas via the copper landline system, the new fibre optic networks being progressively rolled out around the country and/or the 4G system.

NZ should wait to see what health impacts 5G infrastructure and 5G compatible devices will have in other countries where this technology is adopted nrgptr we rush into adopting a technology thst at this stage has unproven safety.

There are no safety standards in New Zealand for cell phones but we still allow the importation of any cellular phone that is compliant with any other countries' regulations which shows a worrying lack of concern for New Zealanders' health. Loss of productivity due to illness and treating potential adverse health effects caused by greater utilisation of wireless technologies could end up outweighing any economic benefits of 5G and I for one am electro sensitive

It is especially worrying considering the research linking cellular phone use to brain tumours and the fact there was NO pre-market safety testing of cellular phones prior to their introduction to the market

New Zealand's standard for devices that produce RFR in the microwave range is already one of the poorest in the world. In NZ the legal limit for exposure to this type of radiation is much higher than in many other countries. (For example, in China, Italy, Russia and Swtizerland, the limit is 10 times lower)

NZ has high legal exposure levels despite the fact that RFR in the microwave range is classified as a possible carcinogen (type 2B) by the World' Health Organisation's International Agency for Research on Cancer (IARC) and despite the fact that NZ has a high cancer rate.

If NZ's already lax limits for exposure to RFR in the microwave range are revised upwards because the system proposed for 5G would be likely to exceed the current limit, this could have negative impacts on human health.

THIS is why it is not being tested!!!! as it would fail as being too much of a health risk

It is foolish to expose New Zealanders to the health risks of additional wireless infrastructure to facilitate appliances such as a talking domestic fridge or a smart meter

It is NOTHING to do with speed.. 5G is a phased array

WEAPON operating outside of any current standards

Initially, they say that 5G will be used mainly as an enhancement of the existing wireless broadband services. However, other uses include self-driving cars, increased use of robotics and industry automation, and massive machine type communications (the internet of things).

They say that there are no potential health effects from increased exposure to nonionizing radiation. However higher frequencies are ionising and therefore harmful to all organisms therefore they have no regard for the health issues that WILL occur.

People won't have any say as to where towers are put and this will impact property values and so called telecommunications facilities can be installed without requiring resource consent from a local authority.

These ultra high frequency (24 to 100 GHz or more) require aimed and amplified signals. "Millimetre wave" are being considered as part of a 5 G system here.

These frequencies cannot travel more than 250 metres *which means that areas where 5G uses millimetre wave frequencies will need to have millimetre wave transmitters every 250 metres or less.*

All areas including rural will become saturated with radiation

The biggest internet of things, amplification is yet to be imagined.

Most people are in a self absorbed trance and are being herded into compact cities to live where they can be "controlled" or worse! They are only interested in using their devices and getting better coverage with no concern for what this is doing to them, so long as they can be "sheeple" and watch Netflix they do not realise what is happening.

If only they know of the "grand plan" for reducing the population and how they are playing right into the hands of its perpetrators.

Would you willingly submit to being irradiated?

You are already brain washed and addicted to your device and you "want" this new technology so you don't even consider what it is already doing to you without the new 5G

system.

What is coming is a "kill grid" These towers will be weaponry and designed to "cook humanity" thereby reducing the population.

With 5G everything (and everyone eventually) will be connected! Microchips will become compulsory in all humans and the frequencies weaponized

Some of these frequencies have not been risk assessed for biological function

60GHz is the wave band that messes with oxygen molecules which affects your blood haemoglobin and stop you from making Vitamin D.

We already know that this is a Class A cancer causing radiation.

Other high frequencies affect water molecules and as the human body is mainly water then this will also affect you and your magnetic fields by causing weird health problems like paralysis, arrhythmia, passing out, fatigue, malaise neurological conditions and tingling, brain fog, short term memory loss and hairloss and you don't need much of this radiation to cause any of the above.

In fact many people are already suffering from this non thermal microwave radiation in the form of blood clotting causing nose bleeds. This also affects sperm counts and don't forget the pollinators like bees and other small insects that are being annihilated

Then there will be "strange" new "diseases" that will be created that will need mandatory vaccination, this then is the beginning of the END of humanity.

There will be no standards and no testing of the 5G network as it will rake in billions of \$ for companies who don't give a damn about humanity.

IF we are to survive this "takeover" and the coming AI we need to make a stand in New Zealand. Let's not be "sheep" and follow blindly.

If we can resist the urge to "Keep up with the Kardashians" then New Zealanders may just survive. Lets keep this country clean and green and radiation free.

If you think any of the above paragraphs are far fetched or conspiracy theories you are wrong this is conspiracy FACT.

There are many millions of people worldwide working to bring down the "cabal" that want to control everyone and eliminate those not of "use". Please don't play into their hands by agreeing to roll out the 5G.

This has already been installed in various places in other countries so we already have data on it.

DON'T let NZ become just another puppet controlled by the half dozen companies who stand to make billions of dollars out of our health and well being.

TO SUMMARISE

This is such an existential threat to the environment to the economy and to mankind that I HAVE to make this info known here as it is a violation of human rights.

It breaks every single law on the planet This is being implemented through ignorance greed and corruption without most people's knowledge.

WE have choices on food and vaccines but not on this microwave technology which not many are aware of.

Are YOU???

Do you know that this technology can also look at you THROUGH the walls of your house? ...and map it Also what about the extremely hot days we had this summer? That was not a natural heat, it actually felt like you were in a microwave and made a lot of people ill

5G will ultimately be used as part of the "Depopulation Agenda" (Agenda 21) as it can be used to shorten lifespan, devalue life quality, also as a control/reward/punishment device: physical and psychological and worryingly as a state-sanctioned executioner.

If you don't believe any of the above check out what it says on the Georgia Guide Stones or research the Kalergi Plan

Text of my submission:

My name is Pam Vernon

Here is my submission regarding 5G preparations for NZ.

Please consider the following concerns:

I am very concerned about the possible introduction of 5G to NZ.

Under the National Environmental Standard for Telecommunications Facilities

the allowable emissions limit for 5G infrastructure using millimetre waves (or any frequency in excess of 2 GHz to 300 GHz) is 10 million microwatts per square metre (10 w/m²).

New Zealand's standard for devices that produce RFR in the microwave range is already one of the poorest in the world. In NZ the legal limit for exposures to this type of radiation under NZS2772.1:1999 is much higher than in many other countries. (For example, in China, Italy, Russia and Switzerland, the limit is 10 times lower at 1 w/m².)

NZ has high legal exposure levels despite the fact that RFR in the microwave range is classified as a possible carcinogen (type 2B) by the World Health Organisation's International Agency for Research on Cancer (IARC) and despite the fact that NZ has a high cancer rate.

If NZ's already lax limits for exposure to RFR in the microwave range are revised upwards because the system proposed for 5G would be likely to exceed the current limit, this could have considerable negative impacts on human health.

I know of people in my own circle who are suffering from sensitivity to EMFs. An increase in the strength of these would doubtless cause even more negative health effects.

I do not believe that the touted benefits to 5G particularly of faster download are not enough to justify compromising our health. Currently my own use of internet is well sufficient for my needs. I personally would not want 5G.

Likewise, more towers would cause considerable damage to our health, going by what I have already read about these and in particular the cancer clusters that have been located around them. I have listened to the information provided about this by the UK Physicist Barry Trower. The risks are very real to our health.

I also believe it would be better for people's health to have only one 5G network rather than three (if Spark, Vodafone and 2 Degrees all decide to build their own 5G networks).

Also of concern, NZ has NO safety standards for the cellular phones on the market (but allows the importation of any cellular phone that is compliant with any other countries' regulations)! This shows a worrying lack of concern for New Zealanders' health.

Regards

Pam Vernon

282 Angela Lyon

In response to consultation of 5G in NZ.... there are many problems

1. People don't know about it so consultation can't truly occur until they do.
2. The increase in EMF's is an obvious problem so for true consideration of what the public

want, maybe we need to slow down and think about it.

3. There is no rush to get rid of copper wires. Internet speed is fast enough, perhaps were just suffering the effects of stress from being wi-fried making us think 10 secs waiting for the internet is a long time.

In short, I'm not prepared for 5G, nor do I need it. I'm actually really scared. My ear burns from my phone and I'm suffering effects of wifi and computer. I'm no ludite, just don't want us to be stuck with somethibg that we don't understand, is detrimental and we can't get out of. Please consider these things, especially if we don't have a say.

Thanks

Angela Lyon

P. S no one I know knows about this consultation and its a shame that because of that you won't get a even take of people's thoughts

283 Iain MacFadyen

Submission from: Iain MacFadyen Nelson

The following is my submission of opposition to any intended introduction of 5G into New Zealand.

I, Iain MacFadyen, **DO NOT CONSENT** to any intrusion of 5G-related frequencies / radiation to penetrate my body, my home, or those areas, streets, suburbs and public buildings, in any town or city, where I conduct business now or in the future.

I OPPOSE any plans for introducing 5G into New Zealand.

This technology is not essential to a country of 4.5 million people. We do not need to have the capacity to run one million internet connections per square kilometre. Secondly, for all reasonable purposes, our existing internet connection speeds and cell phone performance are adequate.

It is NOT worth any compromise, nor even any risk (and the Precautionary Principle is relevant here), to our people and our environment, to add whatever performance is supposedly a benefit of 5G technology.

I quote from a September 13, 2017, appeal from more than 180 scientists and doctors from 35 countries, to the European Union, urging the EU *“to take all reasonable measures to halt the 5G RF-EMF expansion until independent scientists can assure that 5G and the total radiation levels caused by RF-EMF (5G together with 2G, 3G, 4G, and WiFi) will not be harmful for EU-citizens, especially infants, children and pregnant women, as well as the environment”*.

This appeal recommends *“a moratorium on the roll-out of the fifth generation, 5G, for telecommunication until potential hazards for human health and the environment have been fully investigated by scientists independent from industry.”*

These experts state that 5G will substantially increase exposure to radiofrequency electromagnetic fields, in addition to the existing radiation loads created by 2G, 3G, 4G, Wi-Fi, etc.

I do not believe such high levels of concern from experts should be over-ridden by politicians and industry interests.

As someone who has experienced moderate (but still alarming) Electromagnetic Hypersensitivity (EHS), it is obvious to me that, given that EHS can be brought on either by a specific over-exposure or by a cumulative radiation toxicity load, many people will become affected by this disabling condition if 5G were implemented.

If the degree to which I myself am affected with it were to increase, this could place in serious jeopardy my ability to operate in self-employment and continue to create my own livelihood.

I urge those with decision-making power on this issue to act on the Precautionary Principle and **NOT** to allow 5G into New Zealand.

For my part, I **DO NOT CONSENT** to any intrusion of 5G-related frequencies / radiation to penetrate my body, my home, or those areas, streets, suburbs and public buildings, in any town or city, where I and my family live or conduct business now or that we may do so in the future.

284 Joanne Rolston

ATTACHMENTS TO SUBMISSION IN SEPARATE LINKS ON RSM WIEBSITE

Bert & Joanne Rolston

Submission: Preparing for 5G in NZ
30 April 2018

We are against 5G for the following reasons:

Most of us have acceptable access to the internet via the copper landline system, the new fibre optic networks being progressively rolled out around the country and/or the 4G system. Why should a small country like New Zealand size get millions of cellphone towers? Is it necessary?

Who is this going to benefit from 5G?

This is against people's human rights. No one shall be subjected to arbitrary interference with his privacy, family, or home.

Pollution is still pollution even if it's not visible.

If EMF hurts birdlife and other creatures, what would a doubling of cellular phone base stations and "small cell" units placed outside NZ homes in urban areas do? New Zealand doesn't need electronic fields blasting out of cellphone towers everywhere.

Here are the facts:

I reference the attached report by scientist Mark Broomhall on species disappearance from the Mt. Nardi-Mt. Matheson area of the World Heritage Site because of EMR and EMF. <http://www.radiationresearch.org/wp-content/uploads/2017/11/NARDI-WILDLIFE-REPORT.pdf>

This is by an Australian scientist. It needs to be read in New Zealand before technocrats are allowed to force 5G on the population.

Shouldn't the cancer and health risks risks to the population be fully investigated before considering 5G? Why expose the population to more of it just so a 'smart fridge' can connect to the Internet of Things?

289 (name withheld)

Radio.Spectrum,

How could you be so callus as to put the benefits of convenience above the health of the people

What is more important to you? Your policies and plan so an utter disregard for human and environmental health. Focusing with tunnel vision on your goal of faster and more wide spread internet connection than ever before...

It is sickening the face that people like myself can barely function due to EH Sensitivity, which more people are becoming sicker every day as the tech-load on us all is ever mounting.

Either you have never researched the deleterious effects of wireless radiation, or you purposely choose to avoid its existence and focus on your campaign whole-heartedly no

matter what. No matter what is right. We have barely had wireless technology long enough to notice side effects, but they are mounting and more diagnosed each month. It won't be until years down the track that hard evidence hits you explaining how you have sentenced the society to being bombarded by wireless radiation 24/7 like smart meters do to our homes now, sadly.

Please think of the people and not just technological advancement. For example Ethernet cables emit minimal emfs and are many times faster than a wireless router. All technological advancement is progress. Progress is not always beneficial. Progress for the sake of progress, without taking into account the horrific side effects to the unknowing populace is foolish and heartless beyond words.

I assume you care about your families own health, if not your own. Think of them. Would you rather their health or more convenience?

The choice is yours in the end whether you go ahead or not, but the consequences for the health of our populace will also be your responsibility. Every single last brain tumour, every autoimmune disease, every single person living within the 5G array will be your victims.

If you have a heart and a conscience you will not roll 5G out. If you are a money hungry corporation caring about only profit and convenience you will roll it out.

Stop and think of the next generation, not just for selfish current. This is not about you or your organisation, or even your mission. This is about people all over New Zealand. People like you and I, all wanting to live a happy life and meet the same needs. We have more availability than anytime in history, enough is enough. Health first. If we don't have our health, what do we have?

It is easy to hide behind an organisation where people don't hold you personally responsible, but I hope you remember this message and whether you heeded it or not. You will sew the repercussions of your actions as a result. The best people in history stood up for what they believed in. Do it because it is the right thing to do, educate others and do what is right for the people, not technology first, people first always! What else is more important?

Plus if people get ill and die younger they have less time to use and pay for your products, stupid really you will lose so much potential profit.

Whatever pulls your heartstrings to sway you to the light my friend

With love, my troubled friends

<http://www.stopsmartmeters.org.nz/uncategorized/5g-consultation-submissions-due-30->

april/

291 Jenny Kelso

I am very disappointed that so little time has been allowed for public consultation on this issue. This does not allow enough opportunity to research the issue and send in a comprehensive submission. Given the lack of time, I hope there will be some leniency with the deadline for submissions as I only found out about the roll-out of 5G a few minutes prior to the deadline.

The following quote explains extremely clearly why New Zealand should not go ahead with 5G until such time as the potential health and environmental hazards have been carefully assessed by experts. The quote comes from an article supported by medical doctors and scientists and it explains that RF-EMFs have been proven to be harmful for humans and the environment. "Effects include increased cancer risk, cellular stress, increase in harmful free radicals, genetic damages, structural and functional changes of the reproductive system, learning and memory deficits, neurological disorders, and negative impacts on general well-being in humans. Damage goes well beyond the human race, as there is growing evidence of harmful effects to both plants and animals."

Therefore, going ahead with 5G would be the equivalent of an expensive and extremely harmful experiment on the people and environment of New Zealand. In other words, utter madness without at the very least, a comprehensive review undertaken independently of industrial and financial interests.

I will include a quote below from the website: <https://zero5g.com>

<https://zero5g.com/2018/scientists-warn-potential-serious-health-effects-5g-september-13-2018/>

Sincerely

Jenny Kelso

Scientists warn of potential serious health effects of 5G (September 13, 2017)

"We the undersigned, more than 180 scientists and doctors from 35 countries, recommend a moratorium on the roll-out

of the fifth generation, 5G, for telecommunication until potential hazards for human health and the environment have been fully investigated by scientists independent from industry. 5G will substantially increase

exposure to radio frequency electromagnetic fields (RF-EMF) on top of the 2G, 3G, 4G, Wi-Fi , etc. for telecommunications already in place.

RF-EMF has been proven to be harmful for humans and the environment. 5G leads to massive increase of mandatory

exposure to wireless radiation 5G technology is effective only over short distance. It is poorly transmitted through solid material. Many new antennas will be required and full-scale implementation will result in antennas every 10 to 12 houses

in urban areas, thus massively increasing mandatory exposure.

With the ever more extensive use of wireless technologies, nobody can avoid to be exposed. Harmful effects of RF-EMF

exposure are already proven. More than 230 scientists from 41 countries have expressed their “serious concerns” regarding the ubiquitous and increasing exposure to EMF generated by electric and wireless devices already before the

additional 5G roll-out. They refer to the fact that “numerous recent scientific publications have shown that EMF affects

living organisms at levels well below most international and national guidelines”. Effects include increased cancer risk,

cellular stress, increase in harmful free radicals, genetic damages, structural and functional changes of the reproductive

system, learning and memory deficits, neurological disorders, and negative impacts on general well-being in humans. Damage goes well beyond the human race, as there is growing evidence of harmful effects to both plants and animals.

After the scientists’ appeal was written in 2015 additional research has convincingly confirmed serious health risks from RF

-EMF fields from wireless technology. The world’s largest study (25 million US dollar) National Toxicology Program (NTP) , shows statistically significant increase in the incidence of brain and heart cancer in animals exposed to EMF below the ICNIRP (International Commission on Non -Ionizing Radiation Protection) guidelines followed by most countries. These

results support results in human epidemiological studies on RF radiation and brain tumour risk. A large number of peer-reviewed scientific reports demonstrate harm to human health from EMFs.....

The Nuremberg code (1949) applies to all experiments on humans, thus including the roll - out of 5G with new, higher RF

-EMF exposure. All such experiments : "should be based on previous knowledge (e.g., an expectation derived from animal

experiments) that justifies the experiment. No experiment should be conducted, where there is an a priori reason to believe that death or disabling injury will occur; except, perhaps, in those experiments where the experimental physicians

also serve as subjects." (Nuremberg code pts 3-5). Already published scientific studies show that there is "a priori reason

to believe" in real health hazards."

297 Michael Fleck

To Whom It May Concern:

I am a community health advocate stunned by this discussion document, in which only one line

mentions the effects of 5G radiation on human and animal health.

One line.

Where is the reference to years of extensive research documenting the ill effects of electromagnetic and microwave radiation?

Where is the acknowledgment that community groups and individuals have for many years opposed

the erection of cell phone towers near homes, schools and hospitals? . . . erections always done without adequate consultation with those affected, and without provision for recourse to government regulation.

The introduction of 5G into New Zealand -- without significant research into the health effects -- must not proceed.

We are still dazed and ignorant about the health effects of 4G..

This 5G development is being driven by a powerful telecommunications lobby that sees only great profits -- to hell with community health and well-being. New Zealand's health care system will be bankrupt dealing with the eventual cancers and other disabilities generated by excessive radiation. And our social fabric will likewise deteriorate.

Stop this process now and do the research!

Yours sincerely,
Michael Fleck