



Safe ICT NZ

Safe Information and Communications Technology for New Zealand

Newsletter July 2023

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You may have noticed floaters in your eyes, or that they are sore and irritated, or that your teen now needs glasses. You may feel tired after just scrolling your socials. Or, you badly need coffee in the morning after getting stuck in an internet rabbit hole.

Those are the effects of tech use you are probably aware of, but, there is a whole lot more which is vital to be aware of, if you want to be healthy in the 21st century.

We will talk about how wireless radiation (which we get from Wi-Fi, XBoxes, Bluetooth, cellphones etc) affect sperm and eggs, how mother's phone calls create tachycardia in their unborn babies, how scientists can see and count the DNA breakage from exposures to wireless radiation and what that might mean, and much more, including environmental effects of which the majority of people are unaware.

Save the date of this Wellington Event:

Tech and You

Getting savvy enough to explain to your friends why, and how, to do things more healthily tech-wise.

Saturday 7th October 4-6pm

Collective Hub Johnsonville

There is good news as well. We can show you the science papers on how earthing/grounding is able to silence chronic inflammation and help heal wounds more quickly.

We can show you some adaptations that make your tech use safer. We have invited Earthwave's Andy Hooley to demonstrate safer ways of using your devices by hooking up phones and laptops to ethernet, as well as using earthing and shielding products and how to avoid mistakes when using such products.

We will have a list of peer-reviewed research papers to take home.

Mark the date on your calendar and invite a friend so they get the benefits too.

Important new stuff on the website

[Neuroscientist Gertrude Teuchert Noodt's Film: Growing unhealthy in the world of digital media](#) showing the terrible results of children growing up with a lot of screen time. She worries that our pre-frontal cortex is returning to that of stoneage man/woman. She says: "At the moment, the global spread of digital media seems to me like an animal experiment on humans that no ethics committee controls". She discusses addiction. "If children remain trapped in digital addiction, many of their brain functions no longer mature properly. You just don't learn to think straight....If you take the smartphone away from children and they aggressively beat their parents – then this is a typical sign of withdrawal symptoms. The child is in cold withdrawal." Noodt sees digital media as [a danger for the brain](#), she believes work compression and digital media are driving people, not just children, to the brink of resilience.

"If children remain trapped in digital addiction many of their brain functions no longer mature properly".

—Neuroscientist Gertrude Teuchert Noodt.

Link to an [Egyptian](#) study showing tachycardia in babies in the womb and newborns, when their mums are on cell phones.

Song by the Ridiculous Meep by Murray B White "[Your Cell Phone's been Nuking your Johnson](#)".

Child Psychiatrist Dr Victoria Dunckly's [videos](#). Dr Victoria Dunckley is an expert on the impact of screen-time on the developing brain. She believes even the educational stuff is making our kids wired and tired. She has found doing a 12wk vacation from devices has stunning effects, lowering behavioural problems, and lowering difficulties in children with autism, ADHD, etc. It is worth taking a look.

Conflict of Interest

Our dissatisfaction with the Minister of Health's satisfaction

Safer Tech NZ (a similar group to ours), Waiheke Action for Ethical Technology, and ourselves, have signed letters to the Minister of Health regarding a serious conflict of interest.

We believe that having a private company:

1. Monitor the compliance of safety standards for various Telcos, while also performing compliance monitoring for the Ministry of Health
2. Select the research viewed by the Interagency Committee which monitors developments in science, to see if standards should be changed, while being employed by telcos

Is a clear conflict of interest.

The Interagency Committee is, according to its charter, meant to provide **independent advice and to monitor and review research** on the health effects of electromagnetic fields. Sounds good doesn't it? In reality it's a once over lightly.

The principal of this company is also on the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) committee, and we share our standards with them.

ARPANSA was caught using a UK research review and ignoring papers in their own data base, creating a misleading picture of the current science. You can see Victor Leach from ORSSA's YouTube video of how the data is cherry picked [here](#). This is serious stuff. It is like having your friend do your university assignment for you, except your friend missed half the important facts, and got the numbers wrong, but here it is related to safety standards for all of us. Meanwhile, our health ministry doesn't even warn us to hold our phones away from our brains to comply with the standards such as they are.

We note that after pointing out that the Interagency Committee were not actually looking at any individual science papers they changed the wording of their tasks regarding their reports to government branches saying: "[These reports are not intended to be an exhaustive or a systematic review of recent research.](#)"

As usual their report will be based on a review of reviews of science, provided by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). We look forward to the day when cutting edge science papers are discussed in depth! For those new to the discussion ICNIRP is the subject of two European Parliamentary reviews detailing its conflict of interest. It was peer reviewed by Professor Neil Cherry as an unsuitable advisory group when the MoH started using them.

We have updated our website so that it is easy to see many of the conflicts of interest rife in our safety regulations. See under **NEW ZEALAND SAFETY REGULATIONS** We are also placing all the recent correspondence with the ministry under **LATEST** on the website.

This conflict of interest was discussed in

a TikTok interview with a Safer Tech NZ representative and had 3400 views before being taken down by TikTok.



Airport Scans

Are they safe? The good news is the body scanners using X-ray back-scatter machines have been made illegal in Europe and phased out in the US in 2013. Our bags are still scanned using X-rays, and our bodies are scanned with various, often hand-held metal detectors that use magnetic fields which will reflect if there are metal objects such as knives and guns.

The bad news is that the X-ray type have been replaced by mm wave scanners. (Advanced Imaging Technology scanners). In New Zealand six airports now have these Advanced Imaging Technology body scanners that use mm waves; Auckland, Dunedin, Christchurch, Wellington, Hamilton and Queenstown and more are proposed.

The millimeter wave machine contains privacy software that scans a passenger's body for anything unusual that might be hidden under his or her clothes. It then creates a generic cartoon image of a body and highlights any potential threat with a yellow box.

Patting down

Provided you haven't been selected as a special security risk (and making jokes about explosives etc will probably put you in that category) you can, at many airports (though apparently not at Heathrow unless you have an implanted cardioverter-defibrillator) select to be patted down instead. The American Environmental Protection Agency state this as an option that you can elect to do on their [website](#).

Security attendants are used to people opting out of the scanners and [Tech](#)

[Wellness's August Brice has a YouTube video](#) of herself being patted down if you want to see what this entails. Brice was "happy to hear from the security attendant in the video that hundreds of people opt for this. Yes you do have to allow extra time to accommodate this. (Give it an extra 15mins per person)

Going through Christchurch airport and opting out

I (Anthea) went through Christchurch airport recently and when I said that I did not want to go through the mm wave scanner, the security officer doing metal detection, explained that it was not an X-ray machine but was using non-ionizing radiation. When I explained I still did not want it, I was directed to another security officer. This officer asked me if I objected to being patted down. No, I didn't object. I was then asked if I wanted this to occur in a private room, I replied "I don't think so, unless I need to." With that, the security officer (in this case a woman) patted me down in the main room (in this case through a bulky jersey, and lightly and not very invasively.

We had a conversation in which she said I would be subjected to more radiation during the rest of the flight and at home.

Lots of radiation travelling

Immediately what bounced into my brain was the fact that female flight attendants often had difficulty conceiving and this was attributed to cosmic radiation and that now airline staff track the amount of radiation they are receiving in total, especially if they are pregnant. The security officer was right that there would be exposure to radiation, of various types, on the rest of the journey; because we are close to the pole, and when we get high up the air is thinner, we do get exposed to cosmic radiation. In fact you can go online and [calculate how much exposure to cosmic radiation you get per flight](#). CHRISTCHURCH -> WELLINGTON, approximately 0.0008 mSv. For context one panoramic dental

x-ray would be more: 0.01mSv, A single chest x-ray: 0.02 mSv. Then there is the usage of phones and devices all over the plane, not to mention the pilots navigational equipment.

The conversation had a friendly tone and I felt that she had enough understanding to realise there was a background to my concerns.

Millimeter waves, even at low power, do cause biological effects

The waves are mostly absorbed into the skin and do not penetrate very deeply, however the skin is not an inert substance. The fact that millimeter wave technology is used in the treatment of skin cancer, means it undeniably has an effect on human cells.

With airport scanners, exposure may be at less power density than from cell phone exposure, or for treating skin cancer, however the entire body is all exposed at one time, including the eyes.

While scientists can barely keep up with the research on bio effects from newly introduced frequencies, Professor Yuri G. Grigoriev's book "[Frequencies used in Telecommunications An intergrated radiobiological assessment](#)" discusses some of the research on mm waves. For example, upon exposure to low intensity mm waves, important immune master cells, in the body's tissues; the mast cells, degranulate (release chemicals like histamine). This might create a cascade of effects in the body. Popov et al., (2001). A Radiation Research Society paper on airport scanners concludes there is [not enough publicly released information on exposures and doses received, to determine safety](#).

Incidentally, France and Germany have abandoned millimeter wave scanners because of the large number of [false positives](#) from sweat and folds in clothing. Indian airport staff testing them found scissors [and a 9mm magazine got through](#).

NZ Skeptics Society

The administrator of the New Zealand Skeptics society had been at the Go Green Expo, and as an IT professional, he found himself triggered and angry at the information in our Safe Technology quiz and published a newsletter and web site post claiming to debunk our answers.

We didn't discover this until recently. When we did, we created a web page refuting the debunking, and then sent a link to the administrator. We have never received a reply back, however the post and link are now both offline.

Our one page of quiz answers lacked the detail needed when up against passion, so here is a repost of the web page especially as readers of our newsletter may come up against the same arguments and emotion:

REPOST OF OUR QUIZ with the NZ Skeptics answers and our response

1. Passwords

What is the most common password on the Internet?

- 123456
- 123456789
- password

Skeptic's response: Okay, this first question is actually okay, and hopefully reminds people to use strong passwords. The answer appears likely to be 123456

Our response: Great you get the point ,it is a wake up call to use more responsible passwords, all of these are bad.

2. Blue light

Blue light is emitted by computer/phone screens, televisions and blue LED lighting. Is it a problem?

- Blue light at night stops the production of sleep hormone melatonin
- Sunlight in the middle of the day is 100,000 times brighter than a computer screen, so there isn't any problem.

Skeptic's response: question's obviously looking for the answer 1. Despite some scaremongering online about the dangers of blue light near bedtime (often used as a way to sell a "harm reducing" product), there's no good evidence that blue light stops melatonin production - it does have some effect in suppressing it a little, but it appears unlikely that this is enough of an effect to cause people problems with sleeping. As for the "wrong" answer, a quick google shows that phone screens vary up to about 1000 nits (candlepower per square metre) brightness, although most these days will significantly reduce their brightness at night. The sun at midday is over 1,000,000,000 (1 billion) nits, so the ratio given here is actually lower than in reality. However, obviously the midday sun isn't conducive to sleep, so this answer's a little nonsensical.

Our response: Your single article with the single paper found to supposedly refute this, does bring up questions about our knowledge on this, however the very article you cite refers also to Anne Marie Chang's paper on actual humans versus mice, who are active in the night, and discusses the harms in detail; mainly much more alertness at night, making it difficult to sleep, and two hours to become fully awake in the early morning. Chang's paper found that, compared with reading a printed book in reflected light, reading a LE-eBook in the hours before bedtime decreased subjective sleepiness, decreased EEG delta/theta activity, and suppressed the late evening rise of pineal melatonin secretion during the time that the book

was being read. When the volunteers read from electronic devices, they had shorter REM sleep, the stage in which memories are consolidated and the brain refreshes itself, than when they read from printed books. <https://www.pnas.org/doi/full/10.1073/pnas.1418490112>

Chang's research showed less memory consolidating REM sleep,

AND

two hours to wake up properly the next morning using e-readers compared to printed books at night

3. Bees

What happened to bee colonies when exposed to mobile phone frequencies (900 MHz) for 10 minutes a day for 10 days?

- The exposed bees did not return to the hive
- The bees continued on as usual

Skeptic's response: quick search found several articles about testing the effect of radio frequencies on bees. Now, I'm not an expert and I don't expect to be able to read these articles and figure out whether they're trustworthy or not, but I don't have to. Luckily other people have done the work for me, and have debunked the study from two Indian researchers that appears to be the source of this claim, as well as other studies: <https://news.vanderbilt.edu/2011/06/14/cell-phone-bee-mortality-link-sensationalism-not-science/>

<https://cleantechnica.com/2011/05/12/are-cell-phone-killing-bees-how-the-false-meme-spread/>

Our response: Agreed, that this area can be complex science. Also we did give only one example of the research. But you haven't used a credible source to refute it. The writers are obviously not in a position to peer review this, whereas the paper we have here shows the actual research, it also references 17 other papers on similar research.

Dr. George L. Carlo from the Science and Public Policy Institute

[//www.buergerwelle.de/assets/files/radiation_is_killing_the_bees.htm?cultureKey=&q=pd](http://www.buergerwelle.de/assets/files/radiation_is_killing_the_bees.htm?cultureKey=&q=pd)

We also have a pdf on the webpage: TheEffectofCellPhoneAntennasRadiationontheLifeCycleofHoneybees.pdf

4. Absorption of radiation by our bodies

How far from your head do you need to keep your cell phone to keep to adsorbed radiation guidelines?

- 3mm from your head
- This varies from phone to phone, but at least 5mm - 15mm. Researchers (ANFR) have found the majority of phones tested emit radiation 3x higher than safety standards, so triple the distance on your phone's safety guidance: 1.5cm - 4.5cm.

Skeptic's response: if we assume they mean absorbed rather than adsorbed, then it appears that 3mm should be fine. There's some good information about how this is scaremongering from both our own Ministry of Health and the US National Cancer Institute:

<https://www.health.govt.nz/your-health/healthy-living/environmental-health/household-items-and-electronics/cellphones>

<https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet>

Our response: Firstly, the fact that you have to hold your phone away from your head at all is not highlighted by our Ministry of Health as it should be. Daily we see people totally unaware of this fact. (Admittedly newer iPhones try to power down so this is not necessary, that they don't succeed is another story.) The IEEE report corroborates our claim that many cell phones do not adhere to the International safety emissions guidelines (such as they are) and that it is difficult to comply with this. <https://ieeexplore.ieee.org/document/8688629> The NIH

reference cited would be assuming phones to comply with the regulations.

When our Ministry of Health decided to go with the ICNIRP guidelines, peer review of their reports was done by Professor Cherry arguing that they should not accept the advice of ICNIRP. There is further information on our site under New Zealand Safety Regulations and the report for your attention. (Regarding adsorption versus absorption we might concede that, since absorbing tends to be a more entire volume process and adsorbing is more surface one, and there are papers that show our skin's structures transport radiation further in.)

5. Eyes while looking at a computer screen

- Our blink rate halves from twelve blinks a minute down to six blinks a minute and dries our eyes.
- Our blink rate goes up to twenty four blinks a minute and wets our eyes.

Skeptic's response: first paper (<https://pubmed.ncbi.nlm.nih.gov/24413278/>) found when searching for this suggests that neither are true, and that our blink rate when staring at a screen is pretty much the same as when we stare at, and focus on, a piece of paper. It goes on to give some reasons why previous studies may have reached different conclusions.

Our response: The papers we have been looking at weren't corroborated by your paper, however, in the paper you cited, it is clear that there is still visual fatigue, concluding that a significantly higher percentage of incomplete blinks was observed for the computer condition (7.02 vs. 4.33%; p = 0.02). Our statement

was oversimplified. The main point here is that computers do give us eye strain. The Optometrists Association is warning people about this. "Fact: Actually, prolonged usage of digital devices is a main cause of Computer Vision Syndrome (CVS), otherwise known as Digital Eye Strain. Digital eye strain can cause significant discomfort— sore or tired eyes, blurry vision, dry eyes, headaches, and even neck or shoulder pain". .://www.optometrists.org/vision-therapy/guide-to-vision-therapy-for-adults/what-is-computer-vision-syndrome/digital-eye-strain/

In addition they say: corrective eyewear cannot always prevent the effects of prolonged screen time. However photochromic lenses that change with light intensity and anti-reflective coatings can be worn to reduce the symptoms of the condition.

6. Is BlueTooth safe?

- It is not very powerful so isn't dangerous.
- BlueTooth uses very similar frequencies (2.4 - 2.4835 GHz) to a cell phone's ones (400 MHz - 2 GHz), But because it blasts at full power all the time, the risk may be worse or equal to a cell phone's (when its BlueTooth and GPS are off).

Skeptic's response: Like other technologies that our technology devices use, Bluetooth emits only low levels of non-ionising radiation, so it's considered safe to use:<https://www.headphonesty.com/2021/06/is-bluetooth-safe/>

<https://www.soundguys.com/is-bluetooth-dangerous-18735>

Our response: Has the writer considered that if Blue-Tooth frequencies can make electronic devices do things, why would it not also effect our electrical beings, since each and every one of our hundred trillion cells has a voltage gate? Even the articles you cite bring up additional

problems such as exposures to more than one frequency at a time. Here is a discussion on the dangers of Blue tooth ear buds which expose users to sometimes more radiation than a cell phone and usually for longer. <https://www.saferemr.com/2016/09/airpods-are-apples-new-wireless-earbuds.html>

7. Is Wi-Fi safe?

- It is non-ionising radiation, without enough power to take an electron off an atom, so therefore it is safe.
- Research on animals exposed to Wi-Fi has found problems with sexual and fertility cell development, compromised immunity, cancer, and other negative health effects.

Skeptic's response: Here we go again, more mentions of "research" and yet not a single link, or study name, is given. I'm happy to concede that there likely are studies out there that claim each of the things listed in answer b., but that doesn't mean these are real effects. What we do know is that these kinds of results are implausible given what we know of non-ionising radiation.

Our response:

The science of the effects on our bodies from wireless radiation is complex, and is often subtle. For example the first exposure to cell phone frequencies strengthens the body against further exposure by making stress proteins, but for chronic exposure it is a different and complex story. There are real risks, particularly to children, and to the developing embryo. The assumptions of safety were overturned by scientists studying ionising radiation who found surprises in results which made them relook at their assumption of safety from the low power of ionising radiation.

It is now well proven to have biological effects. Evidence of this is provided in the European Union's Reflex report. <https://itis.swiss/assets/Downloads/Papers-Reports/Reports/REFLEXFinal->

[Report171104.pdf](#)

The aim of the REFLEX project was to apply advanced methods and procedures developed in toxicology and molecular biology to investigate the basic mechanisms in cellular and sub-cellular systems that are possibly triggered by exposure to electromagnetic (EM) radiation, e.g., from power lines and communication systems. Researchers nvestigated the effects of EMF on single cells in vitro at the molecular level, using radiation below the energy density reflected by the present safety levels. The consortium was led by REFLEX coordinator Prof. Franz Adlkofer of the VERUM Foundation, and included eight biological laboratory partners plus the engineering partner, the IT'IS Foundation. The results of this have had pushback from the military, and from industry.

In the Reflex report you can find the Comet assay tests that show DNA damage. The assay gets its name from the appearance of a damaged cell. First, the cell is set in a gel and "lysed" or punctured. Then an electric current is run across the cell. When strands of DNA break, the broken pieces are charged. The electric current causes those pieces to migrate through the gel. As a result, a damaged cell takes on the appearance of a comet, with the bits of damaged DNA forming the tail.

Rats were exposed to ionising radiation and non ionising radiation and of course protected from both as a control, as well. When you look at the comet assays of the rat's brain cells, the comet tail of broken DNA from both types of exposure were quite similar. In both types, there were broken single and double strands of DNA. Drs Lai and Singh originally preformed this for EMF exposure and this work has been replicated, although not always to the same quality.

Lai and Singh exposed rats to 2 hours of low dose non-ionizing radiation (giving less exposure than would be given by a cell-phone) and found a [30% increase in single strand DNA breaks compared to the control group](#). Breakage occurs at Wi-

Fi type exposures and cell phone type exposures. You can see pictures of what I am talking about regarding Wi-Fi frequencies: <https://www.washington.edu/news/2004/02/18/exposure-to-low-level-magnetic-fields-causes-dna-damage-in-rat-brain-cells-researchers-find/#:> (Wait a for the image to display). To see cell phone exposure comet assays see here: <https://www.emfanalysis.com/new-paradigm-emf-science/reflex-comet-assay/>

Rats exposed to a low dose of microwave radiation, similar to a cell phone's radiation for 2 hours showed a **30%** increase in single-strand breaks in their brain cell DNA, compared to the control group

For many of the papers on immunity and sexual and fertility cell development, compromised immunity, and cancer we suggest you read (in the pdf format on our books page) **Frequencies used in Telecommunications. A radiobiological Assessment by Yuri Grioriev.** <https://www.safeictnz.org/books> These are peer reviewed papers and in some cases award winning science.

8. Are wireless trackers proven safe? Here we meant the safety of wireless trackers (wildlife telemetry).

- No. There is no research proving safety. The same frequencies have been tested on chickens and proven harmful to their developing embryos, so they're unlikely to be safe for other birds either.
- Yes. If they weren't safe we wouldn't be using them.

Skeptic's response: wireless trackers I assume they're talking about (AirTag, Tile, etc) basically use Bluetooth (specifically BTLE - BlueTooth Low Energy) - so see question 6 above, as these are safe to use. The devices rely on other people's devices to report your tracker when it's in range, which is a clever solution that works especially well in areas with a high population density. Eventually trackers might start using something that doesn't rely on other people's phones to find your device, like LoRaWAN, but that could only happen once there's a comprehensive, accessible national network available.

Our response: We were actually referring to the trackers used on endangered species being researched. Sorry that wasn't clear. Alfonso Balmori did a review and could not find any testing to see whether these were actually safe. <https://pubmed.ncbi.nlm.nih.gov/26615484/> Tiny levels of electromagnetic used by bees and flowers interacting for example, are not catered to by the existing guidelines which are inappropriate for trans-species sensitivities and different non-human physiology <https://pubmed.ncbi.nlm.nih.gov/26615484/>

[gov/36505009/](https://www.fda.gov/36505009/)

9. Pacemaker safety

How far away should you keep your phone from a pacemaker to be safe?

- More than 3cm.
- More than 15cm and more than 30cm while charging.

Skeptic's response: what I can find online, the risk to pacemakers from a mobile phone is very low, and newer generation networks (3G, 4G and beyond) tend towards being lower power than their predecessors, so modern phones are even less risky than older ones. But, for anyone who wants to be cautious, here are some decent guidelines: <https://www.fda.gov/radiation-emitting-products/cell-phones/potential-cell-phone-interference-pacemakers-and-other-medical-devices>

Our response: The very paper you refer to from the FDA advises to "hold the phone to the ear opposite the side of the body where the pacemaker is implanted to add some extra distance between the pacemaker and the phone". Why bother advising this if there is no risk? Is an older person with a pacemaker always going to have the latest supposedly less risk phone, and is the phone actually going to comply with the radiation levels it is meant to?

10. Google collecting wireless data

When filming for Google maps did Google also collect wireless data, including complete email messages, in New Zealand?

- Yes.
- No.

Skeptic's response: we finish off on another accurate question/answer. Yes, Google messed up and ended up storing data from some unencrypted WiFi access points as its Google Street View cars were driving around New Zealand.

Google was using their cars to scan WiFi access points and record their SSIDs (the names of the wireless networks), with the plan being to use them to allow people's phones to figure out someone's approximate location even if they couldn't get a useful GPS signal, or didn't have GPS in their device. But an engineer ended up adding code to capture data if it was being sent openly, without any encryption. Here's what New Zealand's Privacy Commissioner had to say about the debacle: <https://www.privacy.org.nz/publications/commissioner-inquiries/google-s-collection-of-wifi-information-during-street-view-filming/>

Okay, stop the clock. It's now 2:15am - so it took just over an hour to show that most of the expected answers are just flat out wrong. Here's the reverse of the quiz sheet, which it turns out has all of their expected answers: In looking into these questions I learned a little more about technology, which is cool, but I also saw many reputable sites saying the same thing: The technology we use today isn't using any electromagnetic frequencies that are likely to be affecting our physical health. In fact, the real danger to physical health from devices like mobile phones doesn't come from their "radiation", it comes from human stupidity - in this case people using their devices while driving, and becoming a danger on the road to others.

Our response:

We think it is important to realise that wireless data is less private and safe than many people realise.

Also, that Google has an influence on our lives that is not transparent to everyone. Dominance by a single search engine company often goes unquestioned and unnoticed. Google did this, and for most of us, without our knowledge, or consent.

The very influencing of the information that comes first on our web searches has huge potential power, that can influence many spheres including elections.

The publication **Proceedings of the National Academy of Sciences (PNAS)** has a [research article](#) which explains that specifically. They can show that (i) biased search rankings can shift the voting preferences of undecided voters by 20% or more, (ii) the shift can be much higher in some demographic groups, and (iii) such rankings can be masked so that people show no awareness of the manipulation.

We are all for digital access, We would however, like people to lower their risk and to use wired tech as much as possible. Wired tech, while being inconveniently tethered, has the convenience of speed and reliability. We believe that if you truly look at the research you will be willing to make these small changes and to help us spread the word about this risk.

“Biased search rankings can shift the voting preferences of undecided voters by 20% or more.”

—Robert Epstein and Ronald E. Robertson PNAS