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MINISTRY OF HEALTH

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15 December 2022

s 9(2)(a)

By email: s 9(2)(a)
Ref: H2022017727

Tēnā koe s 9(2)(a)

Response to your request for official information

Thank you for your request under the Official Information Act 1982 (the Act) to Manatū Hauora (the Ministry of Health) on 28 November 2022 for information regarding the Interagency Committee on the Health Effects of Non-Ionising Radiation. Please find a response to each part of your request below:

1) *Please provide an up-to-date list of the current members of the Interagency Committee for Health Effects of Non-Ionising Radiation.*

Please see attached as Document 1 a list of the current members of the Interagency Committee for Health Effects of Non-Ionising Radiation.

2) *Please provide e-mail addresses for these Committee members and/or an e-mail address to which correspondence can be sent to the Committee.*

You can contact the committee by emailing: info@health.govt.nz

3) *Please provide the Minutes of the last three meetings of the Committee and the date of the next meeting.*

Manatū Hauora has identified 3 documents within scope of this part of your request. All documents within scope of your request are itemised in Appendix 1 and copies of the documents are enclosed.

4) *Please give details of the process by which relevant scientific research studies and reviews are brought to the attention of the Committee, including details of any individual responsibilities in this respect.*
5) *Please provide details of the 'checks and balances' in place to ensure that Committee members are being presented with the full range of relevant research and that ALL relevant studies are being brought to the attention of the committee, whether or not health effects are identified in the study.*

All members are free to, and encouraged to bring relevant information to the committee, and should they choose to do so it is for them to use their professional judgement as to what is of interest. Members may identify reviews prepared by national and international health and scientific bodies. Examples of the criteria for individual studies include:

- whether the publishing journal is included by PubMed
- whether the researchers followed good scientific practice (eg, double-blind evaluation, sham controls, proper dosimetry/exposure evaluation)
- whether the end points are directly related to human health and/or areas of uncertainty highlighted in national/international reviews.

The Committee does not, however, aim to conduct a systematic review of all recently published research, as this work is already undertaken periodically by expert panels assembled by national and international health and scientific agencies. These reviews are an important input to the Committee's work.

A recent summary of the key research reviewed by the Committee may be found at health.govt.nz/publication/interagency-committee-health-effects-non-ionising-fields-report-ministers-2022. This also includes a brief description of the process the Committee follows.

> *6) Please give the names and qualifications of any Committee members having postgraduate qualifications or above in biology, epidemiology or similar fields of expertise.*
> *7) Apart from the representatives of the telecommunications industry, please give details of any other members of the Committee who have employment, contractual or any other form of relationship with the telecommunications industry.*

John Dockerty and Andrea t'Mannetje are the academic representatives on the Committee. You can find details about their qualifications below:

- www.otago.ac.nz/dsm-psm/people/academic-search/profile/?id=726
- www.massey.ac.nz/massey/expertise/profile.cfm?stref=942830

As we have stated in previous responses to you, the Committee membership includes representatives from government, industry, academic and consumer groups. Further information on the composition and terms of reference for the Committee is publicly available and can be found at health.govt.nz/our-work/environmental-health/non-ionising-radiation/research-non-ionising-radiation

Most, if not all, of the Committee members have some form of relationship with the telecommunications industry. They are appointed due to their expertise and knowledge of that industry, and this is necessary for them to carry out their function.

I trust this information fulfils your request. Under section 28(3) of the Act, you have the right to ask the Ombudsman to review any decisions made under this request. The Ombudsman may be contacted by email at: info@ombudsman.parliament.nz or by calling 0800 802 602.

Please note that this response, with your personal details removed, may be published on the Manatū Hauora website at health.govt.nz/about-ministry/information-releases/responses-official-information-act-requests

Nāku noa, nā

Dr Andrew Old
Deputy Director-General
Public Health Agency

Appendix 1: List of documents for release

#	Date	Document details	Decision on release
1	Undated.	List of members of Interagency Committee on the Health Effects of Non-Ionising Fields.	Released in full.
2	18 February 2021	Meeting Notes – Interagency Committee on the Health Effects of Non-Ionising Fields	
3	17 February 2022	Meeting Notes – Interagency Committee on the Health Effects of Non-Ionising Fields.	
4	22 September 2022	Meeting Notes - Interagency Committee on the Health Effects of Non-Ionising Fields.	

Interagency Committee on the Health Effects of Non-Ionising Fields

Richard Jaine Chair, Representative of Manatū Hauora
Sally Gilbert Secretary, Representative of the National Public Health Service
Martin Gledhill Representative of the National Public Health Service
Pip Parkin Representative of the National Public Health Service
Kimbal McHugo Representative of the Ministry of Education
Lucy Knowles Representative of the Ministry for the Environment
Paul Molloy Representative of Workplace Health & Safety
Jeremy Logan Representative of the Radio Spectrum Management Group
Veerendra Bhim Representative of Energy Safety
Isobel Stout Representative of local government
John Dockerty Academic representative
Andrea t'Mannetje, Academic Representative
Nick Gelling Representative of consumer interests
Ben Blakemore Representative of the telecommunications industry
Adam Tommy Representative of the telecommunications industry
Hayley Head Representative of the electrical industry (transmission and supply)
Peter Berry Representative of the electrical industry (transmission and supply)
Matthew Walker Representative of the electrical industry (transmission and supply)

Interagency Committee on the Health Effects of Non-Ionising Fields

Notes from the Zoom Meeting held on 18 February 2021

Present

Peter Berry (Electricity Engineer's Assoc.), Veerendra Bhim (Energy Safety Group, WorkSafe NZ), Ben Blakemore (Telecommunication Carriers Forum), Simon Cooke-Willis (Telecommunication Carriers Forum), Martin Gledhill (Ministry of Health – Acting Secretary), John Dockerty (University of Otago), Kimbal McHugo (Ministry of Education), Adam Tommy (Kordia), Matthew Walker (Transpower New Zealand Ltd), Andrea t'Mannetje (Massey University), Theresa van Rooyen (Radio Spectrum Management), Pippa Player (ministry of Business, Innovation and Employment), Ken Karipidis (ARPANSA), Sarah Loughran (ARPANSA), Dave McLean (Massey University), Sally Giles (Ministry of Health).

Apologies

Richard Jaine (Ministry of Health – Chair), Marie Gibson (DHB Public Health Units), John Duffy (Consumer NZ), Isobel Stout (local government), Elaine Gyde (Ministry for the Environment), Sally Gilbert (Ministry of Health).

As well as presenting his apologies and announcing his retirement, John Duffy noted that there was no-one in Consumer NZ able to replace him, but he offered to suggest replacements.

Welcome

Due to the absence of Richard Jaine, Dave McLean took the chair, welcomed everyone to the meeting and led a round of introductions.

Finalise the agenda

The agenda was confirmed. An item to discuss a replacement for John Duffy was added to Any Other Business.

Minutes of the previous meeting

The minutes of the meeting held on 13 August 2020 were confirmed as an accurate record of the meeting.

Matters arising

There were no action points from the previous meeting.

New Zealand Information on ELF and RF

Local government
Isobel Stout sent a report that there had been no local government issues.

Ministry of Education
The programme to replace all wireless equipment in schools is now back on after delays due to Covid-19. Resilience for internet connections is also being installed, with 4G connections as a backup for fibre.

Ministry of Health
The volume of correspondence on 5G (Ministerials and OIAs) has been lower than last year.

Energy Safety Service/Worksafe
There have been no queries received.

Update on Standards
Adam Tommy noted the revised ICNIRP Guidelines and that they had been incorporated into the ARPANSA RPS S-1 RF Standard. ICNIRP has a long term project to review its ELF guidelines.

The joint Standards Australia/Standards New Zealand TE-007 committee that develops EMF exposure assessment Standards has proposed the direct text adoption of several relevant IEC Standards.

Health Canada has updated the limits in the Canadian Safety Code 6 (SC-6) RF exposure Standard dealing with brief and/or pulsed exposures at frequencies greater than 6 GHz. The approach takes a modification of that proposed in ICNIRP 2020.

The IEEE is reviewing limits at frequencies less than 10 MHz in its C95.1 Standard.

Ministry for Business, Innovation and Employment
MBIE is looking at RMA reform but waiting for guidance from MfE.

Industry Update on Engineering and Technical Developments
Peter Berry reported that he has not heard of any significant EMF issues from the electricity distribution industry.

Matthew Walker said that Transpower is receiving a low level of EMF enquiries, about one per week. He referred to the recent Climate Change Commission report, and a Transpower report on the electrification of the economy, both of which foresee a move towards increased use of electricity and the consequent need to upgrade the grid.

Ben Blakemore reported that public concerns on RF and 5G seem to have decreased since last year.

Simon Cooke-Willis noted that Spark and Vodafone are rolling out 5G sites and promoting 5G phones. Internet of Things use over platforms such as LoRaWAN is increasing in applications such as agriculture where data volumes are low and using cellular data services would not be cost-effective.

The next generation of WiFi using IEEE 802.11ax protocols is being introduced. It is frequently referred to as “WiFi 6”, which risks confusion with “6G”. It has the same transmit power restrictions, and uses the same frequencies, as current generations of WiFi. In some jurisdictions, a 6 GHz band is also becoming available. WiFi 6 is more efficient than previous generations at serving multiple users, and can transfer data at rates up to 10 Gbps.

In the light of the arson attacks on cellsites last year, Vodafone has commissioned some short videos to show on social media that explain what 5G is really about.

The FAQs that accompany the ICNIRP 2020 guidelines are recommended reading for any radio engineer.

Australian Information on ELF and RF

Ken Karipidis and Sarah Loughran spoke to their report. Ken Karipidis has jointly authored a paper with Andrew Wood (Swinburne University of Technology) on calcium movement in and out of cells. Andrew Wood’s contribution was funded by the Ministry of Health. The paper concludes that RF fields do not have any effect on calcium movement. ARPANSA has paid for the paper to be open access.

ARPANSA has contributed A$350,000 towards the WHO EMF project to help fund systematic reviews of the RF research.

RPS S-1 has been reviewed and accepted by the Australian Radiation Health Committee and will be published on Thursday 25 February.

Sarah Loughran has been engaged as Director of ARPANSA's EME Programme. This programme has now started and activities will include exposure surveys in the home and workplace, looking at the cumulative exposures from different sources and how these change over time. The calibration facility will be upgraded with a new anechoic chamber. The programme will also fund research carried out by ARPANSA and other organisations. In response to a question Sarah said that ARPANSA will not be adding capability to measure SAR from handsets, as this requires specialised, expensive equipment and is already undertaken by others.

International Information on ELF and RF

International Reports (ELF)

John Dockerty gave an overview of the recent papers that he had selected:

- Chen – Dave McLean was a co-author of this paper and gave an overview of the work undertaken, and the conclusions that motor neurone disease was associated with occupational exposure to electric shocks but not ELF magnetic fields. Potential for exposure was assessed using established job-exposure matrices which. While generally suitable for this purpose, they do have limitations. The findings appear to be biologically plausible as electric shocks are a high energy event, whereas ELF magnetic field exposures are not.
- Jalilian – In contrast to the findings of the Chen paper, Jalilian's systematic review and meta-analysis came to opposite conclusions: ELF magnetic fields are associated with amyotrophic lateral sclerosis (ALS, the most common form of motor neurone disease) but electric shocks are not. The overall conclusion from the papers is that more data is needed.
- Nunez-Enriquez – A well conducted study, in an area with higher exposures than most, but few exposed cases.
- Ingle – No effects of ELF fields on fertility were found.
- Huang – The meta-analysis found an association between magnetic fields and dementia, but the data were imprecise.
- Brascher – Provides evidence that people will experience a nocebo effect if told that they could experience adverse effects. Sarah Loughran commented that there had been similar findings in a study at Wollongong.
- Harakawa – 10 kV/m electric fields appeared to suppress a stress response in mice.

International Reports (RF)

- Health Council of the Netherlands review of 5G and Health – Concludes that there is no reason not to deploy 5G at 3.5 GHz frequencies, but recommends that 26 GHz are not used until there has been further research. The review is based on the WHO 2014 draft RF EHC document, supplemented by the Swedish yearly reviews and the Health Council's own search for more recent papers. The conclusion on the 26 GHz band is surprising, as is the decision to consider only research in the frequency range 20 GHz – 40 GHz to draw conclusions about health effects in this band. Some papers that did carry out research in this frequency range were not included in the review.
- National Academy of Sciences investigation of symptoms experienced by US embassy personnel in Havana and Guangzhou – This concluded that directed, pulsed RF energy appeared to be the most likely cause of the symptoms experienced. However, this conclusion is based on speculation as to whether such exposures actually cause some of

the symptoms (eg vestibular disorders) rather than a firm evidence base, and recent reviews discount the possibility of RF fields causing many of the reported symptoms.

- BERENIS review of EMFs and oxidative stress – this is a summary of a longer review to be published on a Swiss government website. It notes the poor quality of some of the research but concludes that there may be effects. Ken Karipidis commented that the authors appear to rely on the numbers of studies finding effects when drawing conclusions, rather than taking account of study quality. One of the systematic reviews commissioned by the WHO considers oxidative stress.
- Roosli – concludes that epidemiology studies do not suggest increased brain or salivary gland tumor risk with mobile phone use but there is uncertainty about long latency periods [more than 15 years].
- Choi – In contrast to the Roosli conclusions, the Choi review and meta-analysis found evidence linking mobile phone use to increased tumour risk. Differences between the Choi and Roosli approaches included the fact that Roosli considered ancillary data, such as registry studies, to provide a check on the plausibility of some of the epidemiology findings, and Choi considered the Interphone study to be of poor quality (despite the extensive validation studies).
- Carlberg – Looked at time trends for thyroid cancers and concluded that they could be consistent with RF from mobile phones being a causative factor.
- Chen – Found that mobile phone use might result in a decreased risk of meningioma.
- Dos Santos – The studies considered did not provide a lot of evidence, but overall indicated no genotoxic effects on the oral epithelium associated with cellphone use. Further studies are needed to evaluate other potential cytotoxic effects.
- Cabre-Riera – Found that higher exposure to RF is related to lower non-verbal intelligence, but cautioned that the nature of the study meant that this could be a chance finding or reverse causality. The exposure measure, in terms of accumulated dose (mJ/kg/day) is different to that normally used for exposure assessment (specific absorption rate in J/kg/sec)
- Karadeniz – Highlights the poor general knowledge amongst the public about causes of cancer.
- Shih – The meta-analysis found that some sources of exposure were associated with increased risk of breast cancer but others were not. Overall they concluded that RF exposures did give an increased risk. Dosimetry is likely to be poor.
- Kacprzyk – A systematic review and meta-analysis found that cellphone use is not associated with tinnitus.
- Elwood – An overview article concluding that RF fields do not cause a specific syndrome of ill health. Many of the symptoms reported are common in the population and similar to those reported with other perceived environmental hazards.
- Wallace – Heart rate variability does not seem to be caused by exposure to GSM signals.
- Koh – Looked at the factors associated with risk perception of 5G networks in Korea.
- Martin – Found that measured exposures to RF fields from cellsites are not associated with non-specific symptoms or insomnia.
- Frank – An opinion piece recommending a moratorium on 5G roll-out pending more research. The opinion is based on a limited review of the research, and un-nuanced view of the precautionary principle.
- Redmayne – Proposes a new model of Electrosensitivity, that needs testing experimentally.
- Eggert – Found that effects of RF exposure on sleep did not appear to be age-dependent in men, and did not indicate any adverse health effects.
- Lopez – Although exposure to WiFi overnight appeared to improve performance in one cognitive task, others were not affected and this could be a random finding.
- Lee – Found variations in exposures to the head from mobile phones depended on the year the measurement was made and the network the phone connected to. Mobile phone output power was normally far below the maximum possible.
- Wust – Found that the effects of heating cells with RF were significantly different from heating them to the same temperature in a water bath.

- Leszczynski – A catalogue of studies of mmWave exposures on the skin, that concludes that more studies are needed to ensure safety. Ken Karipidis commented that ARPANSA has prepared two papers reviewing studies of exposures to mmWaves at levels below the ICNIRP limits, and they have been accepted for publication.
- Lee – Long term exposure to mice resulted in cognitive enhancement at middle age.
- Wood – Reviewed the research on effects of RF on calcium flow in and out of cells (as discussed previously by Ken Karipidis).
- Selmaoui – Reviewed research on the effects of RF exposures on melatonin and cortisol and found conflicting results.
- Delen – Found effects of RF exposure on rat brains that could be mitigated by melatonin injections.
- Romeo – A proposed systematic review of in vitro studies of genotoxicity of RF fields, that supplements the WHO systematic reviews being undertaken.
- Suri – Found no association between ELF magnetic field exposures in power plants and reproductive hormone levels.
- Binboga – Reported evidence for effects of 28 μT ELF fields on heart rate parameters.
- Zhang – Exposed rats over 24 weeks to ELF magnetic fields up to 500 μT and found no effects on blood properties, fibrosis or oxidative stress in the liver or kidney.
- Bouisset – Found that exposure to ELF magnetic fields and AC currents did not affect postural control.

Martin Gledhill spoke to his report on the GLORE meetings. He highlighted the comprehensive review by Health Canada of mmWave health effects research (to date not published), which supported ICNIRP's basis for setting limits but suggested that a slightly different approach was needed for specifying basic restrictions and reference levels for brief and/or pulsed exposures.

He also mentioned the Telstra videos about 5G that have circulated on social media, that take a humorous approach to countering some of the myths that have arisen. They have generally been well-received.

Other business

Replacement for Consumer NZ representative

The Committee agreed that a replacement for a Consumer NZ (who represent the public interest on the committee) representative should be found, and that John Duffy should be contacted to obtain his suggestions for such a person.

The discussion turned to whether there should be wider representation on the committee. Martin Gledhill noted that the committee was established as a technical advisory committee for the Ministry and other government agencies, and that members are appointed based on their expertise. Dave McLean considered that wider representation could do no harm. Kimbal McHugo said the main purpose of the committee is to determine whether the science has changed to the extent that a review of Health and government policy is needed. Simon Cooke-Willis said a consumer viewpoint is important to ask questions that consumers might have, such as "Is this product safe" or "Is it covered by standards?".

Action: Sally Gilbert to approach John Duffy to discuss options for Consumer NZ to continue to provide representation on the Committee.

RF exposure standards in New Zealand

Adam Tommy noted that the Committee had discussed the ICNIRP 2000 guidelines at its previous meeting, and that ARPANSA had incorporated ICNIRP's approach into its new RPS S-1 Standard, and asked whether New Zealand should also consider updating its guidance. Ken Karapidis noted that some small but important changes had been made to the ICNIRP guidelines in RPS S-1. It was noted that the age of NZS 2772.1 was often raised as an objection to its validity.

The meeting decided to recommend that, in the light of ICNIRP's 2020 guidelines and recommendation that countries (like New Zealand) whose exposure standards are based on ICNIRP 1998 update to the new 2020 guidelines, the Ministry of Health update its own recommendations on limits for exposures to RF fields to be based on ICNIRP 2020, like RPS S-1.

Action: The Ministry of Health should consider updating its advice on limits for exposures to RF fields to be based on ICNIRP 2020, like RPS S-1.

Risk communication

The approach to dispelling myths about 5G used in the Telstra videos was raised, noting that it was a fresh approach and appeared to have been successful. Ben Blakemore raised a question about research suggesting that symptoms attributed to RF fields might, in fact, be a nocebo effect, and asked whether that meant the committee should include someone with expertise in that area. Sarah Loughran suggested that risk communication is best directed at people who are undecided, but maybe the approach to how this is done by government agencies needs to be reviewed. Martin Gledhill commented that the problem exists in other areas, such as anti-vaccination and theories on the origins of Covid-19 (and indeed, whether Covid-19 is real) so any change in approach to risk communication could be quite general. He referred back to some comments in his notes on the GLORE meeting, that there was a risk of humour undermining strong messaging, but also noting that the government of Victoria had used humour in its Covid-19 messaging.

The committee decided to ask the Ministry of Health about the options used by the Ministry (and perhaps other government agencies) for risk communication.

Action: The Ministry of Health should respond to the Committee about the options used by the Ministry (and perhaps other government agencies) for risk communication.

Conclusions

The Committee noted the reports received and advised that there was nothing in the research considered at the meeting that would lead the Committee to consider that any change in current policy was required.

Retirement

Dave McLean announced that he is retiring and that this would be his last meeting with the Committee. The Committee gave a vote of thanks for his many informed contributions over the years.

Next meeting

The next Committee meeting is proposed for Thursday 2nd September 2021. As part of the Ministry's approach to sustainability, participation over Zoom will be offered.

Martin Gledhill
Acting Secretary

19 February 2021

Interagency Committee on the Health Effects of Non-Ionising Fields

Notes from the Zoom Meeting held on 17 February 2022

Present

Peter Berry (Electricity Engineer's Assoc.), Veerendra Bhim (Energy Safety Group, WorkSafe NZ), Ben Blakemore (Telecommunication Carriers Forum), Gemma Cotton (Ministry of Health), John Dockerty (University of Otago), Nick Gell (Consumer NZ), Sally Gilbert (Ministry of Health), Martin Gledhill (Ministry of Health – Acting Secretary), Ken Karipidis (ARPANSA), Jeremy Logan (Radio Spectrum Management), Sarah Loughran (ARPANSA), Andrea t'Mannetje (Massey University), Kimbal McHugo (Ministry of Education), Isobel Stout (local government).

Apologies

James Dodwell (Electricity Engineer's Assoc.), Richard Jaine (Ministry of Health – Chair), Helen van Mil (DHB Public Health Units), Adam Tommy (Kordia), Matthew Walker (Transpower New Zealand Ltd)

Welcome

Sally Gilbert took the chair and welcomed everyone to the meeting. Meeting participants introduced themselves. Sally noted that Simon Cooke-Willis has tendered his resignation as assistant to Ben Blakemore in preparing the industry update, and thanked him for all his previous participation.

Finalise the agenda

The agenda was confirmed.

Minutes of the previous meeting

The minutes of the meeting held on 2 September 2021 were confirmed as an accurate record of the meeting.

Matters arising

1. Sally Gilbert asked new members to send their contact details for inclusion at the end of the meeting notes, and existing members to check that their details are up to date.

New Zealand Information on ELF and RF

Local government

The change to the Christchurch District Plan regarding the area of panel antennas received a lot of submissions on unrelated matters. The hearing has taken place and was uneventful.

Isobel Stout mentioned that she has received a lot of correspondence from someone outside the Christchurch area about removal of trees to accommodate 5G transmitters. This was accompanied by a lot of material (mainly European in origin) on the subject. She noted that she was not aware of any such removals in the Christchurch area.

Martin Gledhill commented that widespread removal of trees appeared to be an urban legend, which had been widely discredited.

Ben Blakemore noted that the increased requirement for sites, often at low elevations, meant that there was a greater likelihood that operators would have to work around the presence of trees. However, operators had no plans to fell trees to improve coverage.

Ministry of Education

The upgrade of school wireless networks has been affected by supply chain issues.

Ministry of Health
The volume of correspondence on 5G (Ministerials and OIAs) has again been lower than previously.

Energy Safety Service/Worksafe
There have been no queries received.

Update on Standards
In an emailed report, Adam Tommy said that there were no updates on Standards.

Industry Update on Engineering and Technical Developments
Ben Blakemore spoke to his report. Ho noted that there is still public concern about mobile networks, at levels higher than before the deployment of 5G. Some senior elected local government representatives have been involved in the spread of misinformation. Some local council staff appear to be unfamiliar with the NESTF and its operation.

Isobel Stout said that while there is good information about the NESTF available from the Ministry for the Environment, and perhaps on the Quality Planning website, she has noticed that some Council staff prefer to ask colleagues (who may themselves not be fully informed), rather than look up the information directly, when they have questions about a specific area of planning.

Peter Berry reported that the past six months have been quiet regarding EMF issues, which he finds surprising given the new technologies that are being introduced. These include large solar farms, battery storage by electricity distribution companies, electric vehicle charging stations and 5G for data transmission. He wondered whether the Ministry of Health *Electric and magnetic fields and your health* booklet should be updated to mention these. Martin Gledhill suggested that in the interim some material could be added to the Ministry of Health website.

MOBI-Kids study
Andrea t'Mannetje gave a presentation on the final results of the MOBI-Kids study, which have just been published. The New Zealand arm of the study had received funding from the Health Research council and Cure Kids. The study had to overcome some significant challenges and Andrea explained how this was achieved. As well as the results paper, the study had produced three other papers on brain tumours in young people and six papers on the methodology.

Overall, the study found that there was no evidence of a causal association between wireless phone use and brain tumours in young people, but an observed bias and small numbers for some cancer sites meant that a small increased risk could not be ruled out.

In response to a question, Andrea said that other parts of the study had found a small increased risk associated with nitrates and a slight increased risk associated with medical radiation exposures (but doses and case numbers were small).

Australian Information on ELF and RF
Ken Karipidis spoke to the ARPANSA report.

The first project to be funded under the EME Research Framework will investigate the effects of low level mmWave exposures on cell membrane permeability.

ARPANSA and Swinburne University is conducting a systematic map to collate research on the effects of RF fields on the environment. Little has been done in this area, beyond the use of experimental animals in laboratories. The project will look at any outcomes that have been considered, and highlight where there are research gaps. A search found about 25,000

potentially relevant studies, and an initial review has narrowed this down to a few hundred for further consideration.

Eight out of ten protocols for systematic reviews to be undertaken under the auspices of the WHO EMF Project have now been published. All the protocols are very comprehensive.

The revised ARPANSA RF protection Standard RPS S-1 is now referenced in Australian Communications and Media Authority (ACMA) legislation.

International Information on ELF and RF

International Reports (ELF)

John Dockerty gave an overview of the recent papers that he had selected:

- Mohammed – Many contradictory results on the effects of IF fields on pregnancy.
- Ghazanfarpour – Given the heterogeneity in the results on the effects of electromagnetic fields on abortion, the author's conclusion seems to be too strong.
- Sorahan – Found no elevated risk of Motor Neurone Disease associated with lifetime exposure to ELF fields, but there were associations for some categories of recent exposure.
- Khan – While the authors conclude that ELF field exposure in childhood is associated with adult melanoma, this is more likely related to sun exposure.
- Mild – Notes a new potential source of ELF/IF field exposure (robot lawn mowers).
- An – Found that pulsed EMFs might inhibit tumour cell proliferation and be useful in treatments, but the risk of bias and high heterogeneity of studies weaken this conclusion
- Amoon – Pooling four recent ELF field/childhood leukemia studies showed no association. This could be due to methodological issues. Chance or a true finding of a disappearing effect.
- Onyije – An overview of possible childhood leukemia risks. Only ionising radiation and pesticide exposure during preconception/pregnancy are convincingly associated. ELF fields, living near nuclear facilities, petroleum, benzene, solvent and domestic paint exposure show some association.

International Reports (RF)

- SSM 2020 Report – No new established causal relationships between EMF exposure and health risks have been identified.
- IARC World Cancer Report – Most epidemiological research does not support an association between cell phone use and tumours in the head. In studies reporting positive associations there may be biases.
- Choi – No association between numbers of cellphone subscribers and brain cancer incidence in Korea.
- European joint Research Centre – Preliminary findings do not show a relationship between brain tumours and RF field exposure. More work is needed to overcome limitations in the data.
- De Vocht – Extends findings from a previous registry study on cellphone use and cancer, and continues to find little evidence for an association.
- Dongus – Systematic review finds no detrimental effects of WiFi below regulatory limits.
- Lagorio, Benke, Roosli, Bosch-Capblanch, Pacchierotti, Kenny, Henschenmacher – Set out protocols for WHO systematic reviews on cancer cognition, tinnitus and headaches, self-reported symptoms, pregnancy, male fertility and oxidative stress.
- Grimes – General overview of the RF field/cancer question intended for a medical audience.
- Lin, Foster – debate the question of whether microwave weapons could cause "Havana syndrome". It was noted that there have been other reports on this recently, including one from the CIA.
- Sofri – Concludes that further research on possible effects of 5G base stations is needed.
- Farashi – Unclear whether associations found between mobile use and headaches were due to RF fields or other factors associated with use (eg muscular or mental strain).

- Sterling – Considered that sperm motility was most negatively affected factor associated with RF exposure, but found lack of standardisation in the way studies are conducted and reported.
- Cabre-Riera – All-day whole brain RF exposures were not associated with sleep disturbance or sleep measures. High evening doses may be associated with a small change in sleep time, but this could be due to other factors.
- Dalyot – Examines factors associated with risk perception of WiFi following viewing of an alarmist TV documentary.
- Sun – High intensity pulsed 9.4 GHz fields do not affect basic life indices of roundworms.
- Schmidt – Similar to the Onyije paper discussed by John Dockerty, but also considers the possible role of infections as a cause of childhood leukemia.

Report to Ministers
The specific comments circulated before the meeting were discussed and resolved, and some additional comments made. Following further revision, the report will be finalised.

Other business
There was no other business

Conclusions
The Committee noted the reports received and advised that there was nothing in the research considered at the meeting that would lead the Committee to consider that any change in current policy was required.

Next meeting
The next Committee meeting is proposed for Thursday 22 September. This will be in person if Covid precautions permit.

Martin Gledhill
Acting Secretary

21 February 2022

Interagency Committee on the Health Effects of Non-Ionising Fields

Draft Notes from the Zoom Meeting held on 22 September 2022

Present

Richard Jaine (Manatū Haoura - Ministry of Health – Chair), Peter Berry (Electricity Engineer's Assoc.), Veerendra Bhim (Energy Safety Group, WorkSafe NZ), Ben Blakemore (Telecommunication Carriers Forum), John Dockerty (University of Otago), Nick Gelling (Consumer NZ), Martin Gledhill (Manatū Haoura – Acting Secretary), Ken Karipidis (ARPANSA), Jeremy Logan (Radio Spectrum Management), Sarah Loughran (ARPANSA), Andrea t'Mannetje (Massey University), Kimbal McHugo (Ministry of Education), Adam Tommy (Kordia), Matthew Walker (Transpower New Zealand Ltd), Pip Parkin (Te Whatu Ora – Heath New Zealand National Public Health Service).

Apologies

Sally Gilbert (Manatū Haoura), Isobel Stout (local government), Sarah McCarthy (Ministry for the Environment)

Welcome

Richard Jaine took the chair and welcomed everyone to the meeting.

Finalise the agenda

The agenda was confirmed with the addition of a Standards Update item to the NZ information.

Minutes of the previous meeting

The minutes of the meeting held on 17 February 2022 were confirmed as an accurate record of the meeting.

Matters arising

1. Sally Gilbert asked new members to send their contact details for inclusion at the end of the meeting notes, and existing members to check that their details are up to date.
2. The updated Interagency Report to Ministers has been published and is available on the Manatū Haoura website.

New Zealand Information on ELF and RF

Local government
Isobel Stout advised before the meeting that there was nothing to report.

National Public Health Service update
Pip Parkin also advised that there was nothing to report.

Ministry of Education
The upgrade of school wireless networks continues to be affected by supply chain issues.

Ministry for the Environment
No representative was available from the Ministry for the Environment.

Manatū Hauora
The volume of correspondence on 5G (Ministerials and OIAs) continues to be low. Richard Jaine gave an overview of recent changes at Manatū Haoura. Manatū Haoura now focusses on strategy and policy, and operational functions have been transferred to Te Whatu Ora - Health NZ. Public health matters in the Ministry are handled by the Public Health Agency.

Energy Safety Service/Worksafe
There have been no queries received.

MOBI-Kids study
Andrea t'Mannetje commented that there had not been much reaction to publication of the study earlier in the year. She had been contacted by someone from "Phonegate Alert" who said that the mobile industry was spreading false information and the MOBI-kids authors had conflicts of interest. In fact, there has been full transparency on the study, and none of the authors have financial ties to the mobile industry. A paper by Hardell had criticised what he perceived as weaknesses in the study and conclude that the findings should be dismissed. Andrea noted that strengths and weaknesses in the study had been fully discussed and that if every research paper was expected to be perfect or otherwise dismissed, then nothing would be published.

Update on Standards
There were no updates on Standards to report.

Industry Update on Engineering and Technical Developments
Ben Blakemore reported that all three mobile operators continue to install 5G sites. Some vandalism also continues.

Spark and Vodafone have announced that some of their sites will be sold to "TowerCos" that will be responsible for the infrastructure. The full details of who, for example, will be responsible for RMA compliance, are still being worked through. The move will probably result in increased co-location.

Peter Berry reported that there are currently few EMF issues for distribution companies. He noted that while decarbonising the economy and, for example, switching to electric vehicles is currently seen as "green", once this gathers pace there may be heightened awareness about potential EMF issues to do with (amongst others) charging stations and increased use of battery storage at substations. This should be anticipated and planned for.

Matthew Walker also reported few EMF enquiries to Transpower, but a large increase in enquiries from organisations wishing to either connect new electricity generation or new loads to the grid. He too noted the need to be prepared for a resultant increase in public interest.

Transpower EMF Fact Sheets have been updated following publication of the 2022 Report to Ministers.

Australian Information on ELF and RF

Sarah Loughran highlighted the two research projects that have been announced under ARPANSA's EME research programme. ARPANSA had made a presentation on EME misinformation, and how it might be countered, as part of Australia's National Science Week. This has generated a lot of interest. ARPANSA also made a considerable contribution at the recent BioEM meeting in Japan.

Ken Karipidis reported that the EMR Health Complaints Register, which has been operating since 2003, is now closed. There have been very few new entries recently, and the function has been largely overtaken by ARPANSA's Talk to a Scientist programme. A report on the register is being prepared.

ICNIRP has published a statement describing its role and how it undertakes its activities. This has been prompted by the circulation of material that misrepresents ICNIRP's work and membership. The statement is available at
https://www.icnirp.org/cms/upload/publications/ICNIRProle2022.pdf

International Information on ELF and RF

International Reports (ELF)

John Dockerty gave an overview of the recent papers that he had selected:

- Brabant – The meta-analysis is a weaker design than pooling results at an individual level, and it is still not possible to explain the associations observed, or why the odds ratios are lower in more recent studies.
- Guo – Looked at several potential risk factors for AML in adults, but the work is a bit too brief to draw many conclusions.
- Jalilian – A well conducted study that found no support for an association between occupational exposure to EMF magnetic fields, electric shocks and lymphoma risk.
- Nguyen – As odds ratios were not statistically significant , and pesticides were only inferred rather than measured, not much can be taken from this study.
- Fang – The study was not well controlled and it is hard to draw firm conclusions.
- Mezei – The findings are not too surprising, and any effect would probably be due to a direct effect of electric currents on the nervous system rather than mediated by electric or magnetic fields.
- Boussad – Conclusions largely at odds with other studies suggesting that exposures have not changed much over the years. The paper notes several limitations in the method for assessing exposures.
- Schmutz – Parental and school restrictions on personal device use do not affect RF exposures of adolescents.
- Rangkoov – Insufficient detail in abstract to allow evaluation. Conclusions appear to be too strong.
- Hardell – Discussed by Andrea previously.

International Reports (RF)

- SCHEER Report – Finds no moderate or strong evidence of health effects from exposures that comply with ICNIRP 1998/2010, but suggests that updates at high frequencies introduced by ICNIRP 2020 should be adopted in Europe.
- Schuz – Updates the UK Million Women Study and finds usual cellphone use does not increase brain tumour incidence.
- Vijayan – Does not find an association between cellphone use and salivary gland tumours, but notes limitations in data, especially regarding exposure assessment.
- Elwood – Updates previous registry study on cellphone use and glioma risk in New Zealand and concludes they are not related.
- Deltour – Concludes that registry data does not support increased risks of brain tumours in cellphone users reported by previous case-control studies.
- Bodewein – Highlights weaknesses in many studies that make it difficult to draw conclusions. Very clear presentation of data.
- Girela-Serrano – Suggestive but limited evidence that greater use of cellphones etc may be associated with poorer mental health, but does not distinguish between content/use and RF exposures.
- Prlic – Appears to be backgrounder for readers of this journal, concludes that non-thermal effects dubious and unconfirmed.
- Farashi – Found increased risk of headache associated with increasing call duration and mobile phone use in older people, but does not determine whether related to RF exposures or other factors associated with calls.
- Huang – Short term exposures did not cause symptoms or changes in physiological parameters, and no-one could detect exposures. Sarah Loughran noted that one of the recently announced ARPANSA EME programme studies will also look at physiological effects of exposures.
- Foster – General overview of how RF exposure assessment has evolved over the years.
- Calderon – Finds that duration and number of calls may not be adequate proxies of RF “dose” from wireless phones.

- Lemay – Finds that worst-case temperature increases for short pulses at frequencies above 30 GHz may exceed intended values, but the effect can be limited by considering spatial peak power densities rather than averaging over 1 cm^2.
- Markussen – Repeated RF exposure measurements in same locations in Norwegian city found that exposures were relatively constant over time.
- Mevissen – Protocol for WHO-commissioned systematic review of RF exposure and cancer in animals.
- Pinto – Another protocol for a systematic review of RF exposure and cancer in animals.
- Romeo – Found that much research on RF fields and apoptosis was of poor quality, but that most of the better quality research found no effects. However more work is needed to provide a more complete picture.
- Jankowiak – People detected DC electric fields more easily if they were also exposed to an AC electric field.
- Bouisset – Complex research confirming that exposure of the balance organs to strong ELF magnetic fields has largely the same effect as stimulation AC currents, but there are some small differences.
- Lee – Highlights paucity of research at Intermediate frequencies, but concludes that current exposure guidelines are protective.

Martin Gledhill also spoke to his summary of some of the work reported at the recent BioEM meeting in Japan.

Other business
There was no other business

Conclusions
The Committee noted the reports received and advised that there was nothing in the research considered at the meeting that would lead the Committee to consider that any change in current policy was required.

Next meeting
The next Committee meeting is proposed for Thursday 16 February 2023.

Martin Gledhill
Acting Secretary

23 September 2022