

OVERARCHING STATEMENT from MARGARET CAMILLA BOLSTER AM
TELCOS continue to reply on ARPANSA “guidelines” in these matters, referring to these as “public exposure limits”. These standards verge on irrelevance & mislead Authorities with delegated responsibility for Development Assessment.

Topic: Notification of the inadequate state of scientific knowledge about the biological and health consequences of exposure to Radio Frequency Electromagnetic Radiation

Issue: Telecommunication Towers Proposed for Development approval in Australia at an ever increasing pace.

1 Please note communities' underlying loss of confidence & concern regarding

(1) The current state of scientific knowledge of the biological and health effects from Radio Frequency Electromagnetic Radiation;

(2) The recent albeit belated listing of Radio Frequency Electromagnetic Radiation as a possible carcinogen by the World Health Organisation (WHO);

(3) The reasonable apprehension that many proposed towers will be the source of emissions constituting a continuing 'nuisance' to our land;

(4) The Commonwealth of Australia's failing to be on notice of these matters and exposed to the potential liability from claims from affected parties for any loss of value of their land and foreshadowed health effects suffered by occupiers of the land surrounding the proposed towers.

2 Events in 2011

WHO/IARC Report and Classification for Radio Frequency Electromagnetic Radiation

- On 31 May 2011 **the International Agency for Research on Cancer (IARC), which is a part of the World Health Organisation (WHO), classified cell towers (and all wireless devices) as 2B carcinogens. (Appendix 1)**¹.

¹ IARC is part of the World Health Organisation (WHO).. The definition used by IARC for this classification is that the emissions are “possibly carcinogenic for humans”. It is the same category as DDT which has been deregistered and removed from sale.

To reach their decision, the working group assessed available research in various categories of exposure to radio frequency electromagnetic radiation: environmental exposures associated with signal transmissions used in radio, television and wireless telecommunications; personal exposure through the use of wireless devices; occupational exposure.

Their report will be available in Monograph 102 from the WHO. www.who.org . When it is released the evidence and the reasons for the decision will be provided²

- The scope and significance of the new classification has been noted by Professor Magda Havas, who wrote

“This is a momentous ruling as it acknowledges that radiation from cell phones may cause an increased risk in gliomas (a malignant brain tumour) and acoustic neuromas (tumour of the acoustic nerve). The 2B designation is not limited to cell phones. It applies to all sources of Radio Frequency radiation and that includes cordless phones, wireless baby monitors, WiFi, smart meters, cell phone antennas, broadcast and radar antennas” at www.magdahavas.org

- In a paper published in February 2010, the WHO acknowledged the need for continuing research. Four hundred scientists were invited to assess the gaps and to provide suggestions. Responses from 88 scientists formed the basis for another report which noted.³

“several areas....warrant further investigation and the rapid evolution of technology in this field is raising new questions.” (at 5).

- This indicates that the new devices are marketed and technologies are introduced before the research has been done to guide the assessment of risks to public health.⁴
- Until the monograph is available I provide the following peer reviewed evidence. This is a representative selection from an extensive literature.

² This is the fourth report in a series on the effects of physical agents. The previous one was on the effects of Extremely Low Frequency electromagnetic radiation which was classified as a 2B carcinogen in 2002

³ WHO Research Agenda for Radio Frequency Fields February 2010 www.who.int

⁴ It is interesting to note that 400 expert scientists were asked for suggested research and only 88 replied. (at 9) Their suggestions are listed at 26.

3 Evidence

- Research continues on 3 general levels: epidemiological studies; cognitive and biochemical studies of the effects on humans, animals, plants, birds, insects (bees); tissue and cellular in vitro studies. Some work is at the quantum level.
- In 2007 the Bioinitiative Report was published. Dr David Carpenter, a public health specialist at the University of Albany in New York was a co-author.⁵ David Carpenter is in Brisbane as I write on November 30 2011 (gci.uq.edu.au/Events.aspx)* Specialists in various research fields were asked to provide a review of their area. More than 2000 peer reviewed research papers were summarised. This is the most comprehensive report prepared by independent scientists who had no connection with the Telecommunications industry. The Report has influenced subsequent decisions by the Council of Europe and the European Parliament. (Appendix 2 is the Authors' summary. The entire report may be read at www.bioinitiative.org).
- Another convenient summary of evidence about the effects of exposure to cell towers was produced in 2007, when the City of San Francisco proposed to install a city-wide wireless network. Professor Havas was asked to prepare a submission about the biological and health effects. There was no evidence about WiFi. However, Wifi and Cell towers are in the same part of the electromagnetic spectrum. So evidence for cell towers was substituted. The wireless network was not installed. (Appendix 3)
- At that time there were 7 epidemiological studies of the effects of cell towers on people living near in Germany, Spain, Israel, the Netherlands, Egypt and Austria. As part of the submission, Professor Henry Lai from Washington University, summarised peer reviewed research which demonstrated "*adverse biological effects of radio frequency radiation at low intensities*".
- Symptoms recorded included neurological, cognitive, biochemical and cellular disturbances. For example, people reported dizziness headaches sleep disturbances, depression, difficulties concentrating and remembering. Other medical conditions included cancer clusters, cardiovascular effects, arrhythmias, and problems with the immune system. The doctors in one study observed that there was an early onset of the diseases of ageing. At a cellular level the

⁵ See his biography Appendix .He is guest speaker at University of Queensland Global Change Insititue on 30th November 2011

research showed splits in single and double strands of DNA which did not repair, permeability of the blood brain barrier, stress proteins were produced, changes in calcium metabolism and cell permeability etc. (Appendix 3)

- In 2010 Professor Lai published another comprehensive review of *“studies of people living or working near cellular infrastructure and other pertinent studies that could apply to long-term, low-level Radio Frequency Radiation exposures”*⁶ He wrote that electromagnetic fields are *“among the fastest growing forms of environmental pollution.”* He observed that this will make it increasingly difficult to identify the source of measurable effects. After extrapolating from other than epidemiological studies, he concluded that the research *“warrants caution in infrastructure siting.”*
- The next paper is a biochemical study done in Germany.(Appendix 4 Rimbach Study). There were 60 participants who provided urine samples before and after the installation of a tower. The study continued for 1½ years. Samples were analysed for adrenalin, noradrenalin, dopamine and phenylethylamine. Amongst the findings, the researchers found that there was a significant effect on the adrenergic system (stress hormones). The results were considered by the Council of Europe when the European Parliament adopted Document 12608 in May 2011 which is referred to below.
- Cell towers have been shown also to have an adverse effect on birds, bees, animals and trees. This is significant because 70% of the 90 plants that we eat are pollinated by bees.⁷ Radio frequency radiation leads to the collapse of hives. This is described in the enclosed research papers. Dr Goldsworthy, a London biologist, explains the mechanisms in plants and animals. (Appendix 5. Papers by Goldsworthy, Braune, Favre, Sainudeen)
- These studies are relevant to a site at Marble Hill Road, SA 5137 where I am currently Appealing a development approval for a 42.2 Metre Telstra Tower approval because the Adelaide Hills Council Development Plan specifies that a major objective for the Local Policy Area is to encourage agriculture and horticulture. The

⁶ Levitt B and Lai H Biological effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays *Environ.Rev 18 : 369-395 (2010)*

⁷ Find the WHO summary and 2 papers as examples.

Under the AHC Development Plan the local policy area is defined as Rural (Norton Summit) with objectives to encourage horticulture and agriculture.

There is an 8 minute video from Starling Wild (Yale University) at the Commonwealth Club in San Francisco on 18 November 2010 who summarises the problem. <http://vimeo.com/17268728>

Adelaide Hills Council Development Plan is available on www.sa.gov.au

- In an 8 minute video, Adjunct Professor Starling Wilds (Yale University) describes the effects of cell towers on animals, birds and bees. He said words to the effect that *"There will be a spring that Rachel Carson could never have imagined..."* This was a segment in a panel discussion by experts about the effects of Radio Frequency radiation. It was held at the Commonwealth Club in San Francisco on 18 November 2010.⁸ <http://vimeo.com/17268728>
- EU Directive on Habitats states that a project is not allowed to proceed unless the absence of harm can be shown.⁹ When the Commonwealth Government adopts a similar position, we shall be very proud.
- The lack of relevant research was explained by Professor Ross Adey in the foreword to the Reflex Report.¹⁰ He was an Adelaide trained neurologist who worked in USA and was a leader in the field of electrobiomagnetism until he died in 2004. He provided an insight into the difficulties encountered by researchers who study complex biological systems. He pointed out why the public does not know about this work. (Appendix 6)
- Confusion arises when the role of scientist and the decision maker are blurred. Each role is distinct. Each has a separate domain of discourse. Each work in self referential social sub systems. Each has different standards of proof. Difficulties arise for policy makers who must decide today in the present scientific context. In a letter dated 2004, Professor David Carpenter wrote that they cannot wait until all the "I's are dotted and T's" are crossed". . (Appendix 6 (1). The following reports provide some guidance.

4 Other European Reports in 2011

- On 25 February 2011, the Director of the European Environmental Agency (EEA) reported to the Council of Europe. Professor McGlade

⁸ Commonwealth Club Panel Nov. 18th 2010 *Health Effects of Cell Phones, Wireless Technologies & Electromagnetic Fields With Leading Experts* –

⁹ Council Directive 92/43/EEC on the Conservation Of Natural Habitats And Of Wild Fauna And Flora.

¹⁰ Reflex Report 2000-2004 was managed by Professor Franz Adenkofer from the Verum Foundation www.verum-foundation.de This was an investigation into the results in 7 countries of the effects of low level Radio Frequency electromagnetic radiation on cellular systems. They found breaks in DNA in the exposed cells and the production of heat stress proteins. Furthermore, they reported that DNA breaks at one fortieth recommended exposure. The study concluded that 3G has tenfold greater risk than GSM.

suggested the observations in the report could guide decision makers and policy makers when faced with scientific uncertainty. (Appendix 5). The Director wrote

“The Precautionary Principle provides justification for public policy actions in situations of scientific complexity, uncertainty and ignorance, where there may be a need to act in order to avoid, or reduce, potentially serious or irreversible threats to health or the environment, using an appropriate strength of scientific evidence, and taking into account the pros and cons of action and inaction.”

- The Director warned the EU of the financial and health costs if they failed to act on the early warnings. The report pointed out that late action with toxins led to suffering, health problems and deaths. Also class actions have led to substantial legal costs which have continued into the second generation with DES.¹¹

“The EU Commission and the EEA (European Environmental Agency) sees the precautionary principle as central to public policymaking where there is scientific uncertainty and high health, environmental and economic costs in acting, or not acting, when faced with conflicting evidence of potentially serious harm.

This is precisely the situation that characterises electromagnetic fields at this point in its history. Waiting for high levels of proof before taking action to prevent well known risks can lead to very high health and economic costs, as we have seen with asbestos, leaded petrol, smoking, DES, thalidomide etc.

For example, taking effective precautionary action to avoid the plausible hazards of smoking in the late 1950s or early 1960s would have saved much harm, health treatment costs, and productivity losses from smoking. Waiting to prevent the then known risks of smoking in the 1990s, or later, incurred very large costs to smokers, their families, and taxpayers.

Both the precautionary and preventative principles, along with the principles of the polluter pays and the reduction of hazards at source, are provisions of the EU Treaty, and all are applicable to health, consumer, and environmental issues, such as EMF.”¹²

¹¹ Research in vitro has shown that Radio Frequency electromagnetic radiation splits single and double strands of DNA with consequences for the next generation

¹² Professor J McGlade Director EEA, *Statement on Mobile Phones and the Potential Head Cancer Risk for the electromagnetic fields hearing at the Council of Europe, Paris, 25th February 2011* p2-3

The Director also summarised the implications for decision makers about the strength of evidence and states that

*“The choice of which strength of evidence is appropriate for a specific stressor and types of precautionary actions is an ethical issue that turns upon the costs (quantitative and qualitative) of being wrong in acting or not acting”.*¹³

- On 6 May 2011, in response, the European Parliament adopted the report. *“The Potential Dangers Of Electromagnetic Fields And Their Effect On The Environment”*. (Appendix 9 Document 12608). In the summary, the rapporteur wrote

“...certain high frequency waves used in the fields ofmobile telephony...appear to have a more or less potentially harmful non-thermal biological effects on plants, insects and animals as well as the human body when exposed to levels that are below the official threshold values.

One must respect the precautionary principle and revise the current threshold values; waiting for high levels of scientific and clinical proof can lead to very high health and economic costs..”

- On 27 May 2011 the Parliamentary Assembly passed Resolution No 1815. (Appendix 10) In paragraphs 3-5 it stated that
 - *“3. Mobile telephony has become commonplace around the world. This wireless technology relies upon an extensive network of fixed antennas, or base stations, relaying information with radio frequency signals. Over 1.4 million base stations exist worldwide and the number is increasing significantly with the introduction of third generation (sic and now fourth generation) technology. Other wireless networks that allow high-speed internet access and services, such as wireless local area networks, are also increasingly common in homes, offices and many public areas (airports, schools, residential and urban areas). As the number of base stations and local wireless*

¹³ Ibid at7

*networks increases, so does the radio frequency exposure of the population.*¹⁴

- *4. While electrical and electromagnetic fields in certain frequency bands have wholly beneficial effects which are applied in medicine, other non-ionising frequencies, be they sourced from extremely low frequencies, power lines or certain high frequency waves used in the fields of radar, telecommunications and mobile telephony, appear to have more or less potentially harmful, non-thermal, biological effects on plants, insects and animals as well as the human body **even when exposed to levels that are below the official threshold values.***

- *5. As regards standards or threshold values for emissions of electromagnetic fields of all types and frequencies, the Assembly recommends that the ALARA or “as low as reasonably achievable” principle is applied, covering both the so-called thermal effects and the athermic or biological effects of electromagnetic emissions or radiation.*¹⁵ *Moreover, the precautionary principle should be applicable when scientific evaluation does not allow the risk to be determined with sufficient certainty, especially given the context of growing exposure of the population, including particularly vulnerable groups such as young people and children, which could lead to extremely high human and economic costs of inaction if early warnings are neglected.*

- **The reports question the adequacy of the present Government standards which I refer to below.**

5 Actions taken by Independent Scientists and Physicians

- **Between 1998-2010, groups of independent scientists and physicians held conferences about the biological and health effects of**

¹⁴ Ten years ago in France and Germany wifi was installed in schools and public buildings. Now it has been removed and wired in facilities are used instead. The health risk was too great. In Australia , many schools are installing wireless devices and providing children with tablets and wireless laptops.

¹⁵ Dr Neil Cherry said :there is no safe threshold”.

Extremely Low Frequency and Radio Frequency Electromagnetic Radiation.

- **After each conference, the participants published Statements and Resolutions. They asked governments to change to biologically based rather than engineering based standards and to follow the Precautionary Principle which was proposed by the UN in 1992. (Appendix 11 outlines many of the resolutions. Full details are found at www.icems.eu)**

6 Industry Knowledge

- **In 2000, Deutsche Telekom and Mobil-T appointed the Ecolog Institute in Germany to provide accurate information about the state of research on the biological and health effects of electromagnetic fields. They found many effects. The Institute funding was withdrawn and the sponsors sought other institutes. The new findings contradicted the Ecolog Insitute's results.**
- **The translation of the Ecolog Report has recently been published.¹⁶ This clearly establishes that the industry has known about the problems with electromagnetic radiation since at least 2000. (Appendix 12)**
- **There is other prior evidence about industry knowledge. For example, in 1993, Dr George Carlo, a public health doctor in Washington, was appointed as director of a \$25 million Motorola sponsored research project "to assure the public that phones were safe" (at xiii). Following his adverse research findings his funds were not renewed in 1999. There has been other industry funded research which was curtailed when adverse findings were reported¹⁷**
- **In USA, Telcos lawyers' are required to file a 10K report annually with the SEC. It states the companies' knowledge about health effects. There is no similar need to report in Australia.**

¹⁶ www.hese-project.org/hese-uk/en/niemr/ecologsum.php

¹⁷ Carlo G and Schram M *Cell Phones: The Invisible Hazard In The Wireless Age* (2002, NY, Carrol & Graff) the Motorola project. There is a video in which Dr Carlo addresses a committe from the UK Parliament at

Davis D *Disconnect* (2010, NY., Dutton, Penguin) Dr Davis was interviewed by ABC on Radio National during a recent visit to Australia. There was a television interview on Lateline with Dr Davis in Washington.

Levitt B *Electomagnetic Fields* (2007, NY Harcourt Brace), Blake Levitt was the science correspondent for the New York Times and who has written a clear explanation for the lay reader.

7 Government Standards

- A prime function of government is to protect its population. Occupational Health and Safety and Environmental legislation requires manufacturers and producers to ensure the safety of their products and installations. Wireless devices including cell towers have not been proven safe for humans, animals, plants, birds, and insects.¹⁸
- Australian Government standards are inadequate. They control emissions but they do not protect health. The reason for this is that Australian standards are based on international standards set in 1998 by ICNIRP (International Commission For Non-Ionising Radiation)¹⁹. ICNIRP (an NGO that advises the WHO) standards are set by a task force which considers only part of the relevant research. They consider only the thermal biological and health effects from short term exposure to electromagnetic fields They do not consider the non-thermal or long term effects of involuntary exposure that would be experienced by people near the proposed tower.²⁰ (Appendix 13 Dr Neil Cherry)
- In 1995, Professor Ross Adey²¹, expressed his views about Government standards in a letter to an Australian researcher and colleague, Dr Don Maisch.²²

“the laboratory evidence for athermal effects of both Extremely Low Frequency and RF/microwave fields now constitutes a major body of scientific literature in peer-reviewed journals. It is my personal view that to continue to ignore this work in the course of standard setting is irresponsible to the point of being a public scandal”²³

¹⁸ The Government is in a situation of conflict. They sell the bands for billions of dollars. The Government has allowed the Telco industry to self regulate. Furthermore, each year the telcos provide substantial revenue to Government. Then there is the investment of super funds. For example, Unisuper has a fund which is 80% invested in Apple.

¹⁹ ICNIRP is an NGO in Germany which has a panel of scientists who advise the WHO.

²⁰ Appendix Dr Neil Cherry submission to the Ministry of Health and Ministry for the Environment in NZ when they proposed to adopt the ICNIRP standards for cell towers in November 1999)

²¹ Appendix 10 for a brief biography.

²² Put in background for Adey

²³ McLean L. *The Force* 2011 (Sydney, Scribe 2011) at 77 the author, who is a consumer advocate, was on Ockham's Razor on the ABC National 11 September at 8.45am. There is a podcast or recording.

- The present Government standards reflect only short term effects. There is no recognition of long term effects from 24 hour a day involuntary exposure to the fluctuating information contained as pulsed packets of data from cell towers. The present standard does not allow for the pulsed modulated signals associated with 3G and 4G data delivery from towers (There are many other technical criticisms). Australian standards are set to protect people from levels of exposure but not to protect their health.
- Governments are slow to change their standards. For example, in 2002 Extremely Low Frequency electromagnetic radiation was classified as a 2B carcinogen by the WHO, and yet the Australian standard for short term exposure to magnetic fields is still about a 1000 times higher than the recommended IARC standard. (Appendix 14).
- Professor Havas in Figure 1 at 5 of the San Francisco Report showed the relationships between power density, the distance from the tower and standards in different countries. There is a great variation. (see Appendix 15 There are tables of power flux densities, a conversion table, and a list of biological effects associated with different power flux densities).
- I reiterate, that the WHO has now classified both physical agents, namely, Extremely Low Frequency (2002) and Radio Frequency (2011) electromagnetic radiation, as 2B carcinogens. There is no research to show that towers are safe.
- Since 31 May 2011, scientists have spoken and now policy makers (not scientists), have the responsibility to apply the Precautionary Principle and to make the necessary moral and ethical decisions about the cost (qualitative and quantitative) of "being wrong in acting or not acting"²⁴.

8 Moral and Ethical Responsibility of the Commonwealth, State Governments and Local Government Administrative Authorities.

Towers have a beam that Telcos estimates will radiate for particular distances in 360° circle.²⁵ There will be vertical and horizontal radiation with secondary lobes. Any diagram is a simplification of the complex set of unknown factors that will provide the resultant vector pattern for the beam when the tower is operating 24 hours a day for seven days a week.

²⁴ EEA Report 25 February 2011

²⁵ www.rfnsa.com.au This is the Radio Frequency National Archives Site where the Environmental Emissions Statement may be found.

For example, there may be interference from other radio sources which could lead to a multiple amplification of the signal.²⁶

Telcos state that towers will emit a very small percentage of the permitted levels. But their estimated amount of Radio Frequency radiation is still about 300% higher than the level recommended by IARC. And this is before there is any interference or amplification from other sources or new technological changes which will need increased power from the tower.

The conversion table for different measures of Radio Frequency Radiation compares standards in different countries. The levels of accepted emissions from ICNIRP and WHO are significantly higher than those used in Austria and BRD (Germany). (Appendix 16).

- The WHO has classified cell towers as 2B carcinogens. When towers proceed arbitrarily many people will be involuntarily exposed to the unknown long term effects of the untested pulsed modulated signals. Effects have been measured more than 700m from towers affecting most workers, residents of all ages, and visitors to the adjacent areas. Residents in particular have chosen to live in these locations. They did not choose to be irradiated 24 hours a day seven days a week. They can protect themselves from the way that they use wireless devices but they cannot protect themselves from the emissions from Telco towers for the next 20 years. The effects of radiation are cumulative.
- The new untested 4G communication will be the basis for the telcos future business model. Revenue from voice is declining. The tower will be used to transmit data, video and text, by wireless to the under 25 age group. There will be a demand to increase the speed of delivery at least 4 fold to smart phones and pads. Power flux densities will increase and fluctuate over 24 hours every day. The effects of pulsed modulated signals in the long term are not known. Short term effects are known to be deleterious at the cellular level.
- Once a tower is erected, other telcos may be legally required to co-locate. All new technologies can be added if they comply with Australian standards. Emissions from the tower will increase.
- Future operation of these towers will be controlled by the Telcos, NOT the Councils or the States or the Commonwealth of Australia.
- It should be noted that the telecommunication industry has been unable to obtain insurance against future health claims from the

Austrian industry, Lloyds of London, Swiss Re and other insurers.²⁷ In USA they have set up their own industry fund. Are the Australian Telcos are insured against future health claims? Or do they rely on offshore location (as has been past practice with manufacturers using products later proven lethal) BEFORE they face compensation claims down the track? Will Commonwealth / State / Local Governments become responsible?

- I believe that Council, State, & Commonwealth Governments have a moral and ethical duty to protect the vulnerable: children, the sick, the elderly and pregnant women. The present standards are based on the Specific Absorption Rate (SAR) by the hypothetical head of a 200lb six foot male. In the first instance, as local entities, Councils should behave considerably and responsibly towards their neighbours.
- Should Landowners 'hosting' towers for payment from Telcos be seen to benefit from the known harmful effects of electromagnetic radiation on the most vulnerable people in the local community?
- Should such Landowners be seen to benefit from contributing to the destabilisation of the local food supply? A tower will interfere with local growers, income and their land value.
- Should the value of neighbouring land/houses be diminished &/or rendered unsaleable, by profiteering neighbours leasing such land.
- In the future, the telecommunication company or their successors or their administrators could seek indemnification from the landowners leasing land for towers, for the mass of class actions that could arise.
- Legal actions for nuisance and diminution in property value have succeeded in superior courts of the USA and France.²⁸ The Telcos that introduced the untested technology had the burden to prove that it is safe. The victim (plaintiffs in a class action) did not have to prove that it is dangerous.
- These cases were decided some years before the WHO classified cell towers as 2B carcinogens. I reiterate, that this is the same classification as DDT which was deregistered and is unavailable.

²⁷ Davis D op cit at 208-209. For example, the Stirling syndicate at Lloyds refused to provide insurance.

²⁸ Joseph Criscuola et al v Power Authority of the State of New York et al (1993) 81 NY 2d, 649. S.A.Bouygues Telecom v Forget et al Court of Appeal Versailles (2009)

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