

The case for a precautionary public health policy for cell phone, smart phone and cordless phone use.

New evidence of health risks highlights the need for urgent action

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Background

In March 2009 three Australian neurosurgeons, Drs. Vini Khurana, Charles Teo and Richard Bittar, wrote a 'Letter to the Editor' to the medical journal *Surgical Neurology*. Titled "Health risks of cell phone technology", the letter expressed the neurosurgeons' concerns over what they considered was a serious emerging public health risk from the ubiquitous use of the cell phone and the increasing evidence for harm, including brain and salivary gland tumours, male infertility, behavioral disturbances and electrosensitivity. The authors concluded by strongly recommending that children's cell phone use should be restricted.¹

On previous occasions Khurana, Teo and Bittar have publicly expressed their concerns over what they were seeing in their surgeries. For example, Dr. Teo stated in a *60 Minutes* interview (April 3rd, 2009) that he was seeing a rise in the incidence of brain cancer and as a result the public should be informed as to all the potential causes of the disease. Teo said that he was "incredibly worried, depressed at the number of kids I'm seeing coming in with brain tumours....Just in the last three or four weeks I've seen nearly half a dozen kids with tumours which should have been benign and they've all been nasty, malignant brain tumours. We are doing something terribly wrong."² Khurana shared Teo's concerns as he too is "seeing too many young people with such tumours".³ These concerns were significantly strengthened in 2011 when the International Agency for Research on Cancer (IARC) classified cell phone radiofrequency emissions as a possible human carcinogen.

Despite these concerns coming over three years ago from neurosurgeons whose opinions were being shaped by what they were actually seeing in their surgeries, this information has not had a significant impact on the general Australian public. This is in part due to opposing messages being circulated in media releases by organisations, such as the Australian Mobile Telecommunications Association (AMTA). For example a AMTA press release claims that "The standards [for cell phone use] include significant in-built safety margins and provide protection for all users, including the elderly, children and others regardless of the frequency and use. People can be confident that there is no biological, medical, or statistical basis to assert a link between mobile phone use and brain cancer."⁴

It is well known that such contradictory messages create doubt in the mind of the public and tend to delay or block moves to protect public health. This has been examined in detail in Oreskes and Conway's book *Merchants of Doubt* which should be required reading for all people interested in scientific controversies.

¹ V. Khurana, C. Teo, R. Bittar, 'Health risks of cell phone technology', Letter to the Editor, *Surgical Neurology*, http://www.brain-surgery.net.au/Publication_PDFs/SurgNeurLett.pdf,

² 60 Minutes transcript, 'Wake Up Call' Reporter L. Bartlett, April 3, 2009, <http://sixtyminutes.ninemsn.com.au/article.aspx?id=797215>

³ V. Khurana, C. Teo, M. Kundi, L. Hardell, 'Cell phones and brain tumors: a review including the long-term epidemiologic data', *Surgical Neurology*, Vol. 72, No. 3, pp. 205-214, Sept. 2009.

⁴ AMTA media release, Children's mobile claims run counter to weight of scientific experts, undated, http://www.amta.org.au/articles/amta/Childrens.mobile.claims.run.counter.to.weight.of.scientific.experts_9817

It is the opinion of this writer that the weight of recent evidence of possible increased risks of adverse health effects from cell phone use, as listed below, is now significant enough to trigger a precautionary public health policy to reduce those risks. It is not about giving up the benefits of the technology but how to use it wisely to reduce those risks. .

New Evidence

- **August 2012:** As a result of the 2011 ruling by the International Agency for Research on Cancer (IARC) that classified cell phone radiofrequency emissions as a possible human carcinogen, in August 2012, the Australian government established a \$2.5 million fund for a Centre of Research Excellence (CRE) at the University of Wollongong specifically to research the issue. ⁵ Minister of Health, Tanya Plibersek said in her August 2 press release about the necessity of the research: *“With over 5 billion phone subscriptions world-wide, the electromagnetic energy (EME) that powers this technology is now ubiquitous, as is community concern about the possibility of associated health effects.”* ⁶
- **October 2012:** As reported in *Microwave News*, The Italian Supreme Court granted worker’s compensation to a businessman who developed a brain tumour after using a cell phone for 12 years, making a clear connection between the tumour and long-term cell phone use. This ruling is final and cannot be appealed. This could encourage the filing of lawsuits against cellphone makers and service suppliers. Interestingly the court made a clear distinction between independently funded research and industry funded research, indicating anomalies in the scientific data base. ⁷
- **December 2012:** The American Academy of Pediatrics, a professional organization of 60,000 primary care pediatricians, pediatric medical specialists and pediatric surgeons called for action to protect young children and teenagers from possible cell phone hazards. AAP President Thomas K. McInermy MD wrote in support of a Congressional Bill calling for more research and warning labels on cell phones:

The AAP strongly supports H.R. 6358's emphasis on examining the effects of radiofrequency (RF) energy on vulnerable populations, including children and pregnant women. In addition, we are pleased that the bill would require the consideration of those effects when developing maximum exposure standards. Children are disproportionately affected by environmental exposures, including cell phone radiation. The differences in bone density and the amount of fluid in a child's brain compared to an adult's brain could allow children to absorb greater quantities of RF energy deeper into their brains than adults. ⁸

- **December 2012:** A recent study of cell phone users in Saudi Arabia which apparently has the highest rate of cell phone users in the world (180 phones for every 100 residents!) found that prolonged use of cell phones was associated with

⁵ Univ. of Wollongong, OUW leads new researchcentre targeting phone health concerns, Aug. 6, 2012, <http://media.uow.edu.au/news/UOW130536.html>

⁶ Plibersek, T., media release, Aug. 2 2012,

⁷Slesin, L., Italian Supreme Court Affirms Tumor Risk from Long-Term Use of a Cell Phone, *Microwave News*, October 23, 2012, <http://microwavenews.com/news-center/italian-supreme-court-affirms-tumor-risk>

⁸ AAP letter to Congressman D. Kucinich, Dec. 12, 2012, <http://www.opednews.com/articles/American-Academy-of-Pediat-by-Dennis-Kucinich-121213-724.html>

a number of health problems, including fatigue, headaches, dizziness, tension and sleep disturbance. As a result of this finding, researchers at the College of Medicine at King Saud University have called for public health campaigns to alert the citizens of the dangers and how to minimize the risks.⁹

- **January 3, 2013:** Dr. Lennart Hardell and his research group in Sweden reported on their recent paper published in *Pathophysiology*. This was a meta-analysis of previous data on research on brain tumour risk and the use of cell phones. They found that *“there is a consistent pattern of increased risk for glioma and acoustic neuroma associated with use of wireless phones (mobile phones and cordless phones) mainly based on results from case-control studies from the Hardell group and Interphone Final Study results.”* The authors concluded that the existing radiofrequency exposure standards are *“not adequate to protect public health”*¹⁰
- **January 7, 2013:** A new report released by the Bioinitiative Working Group reviewed over 1800 new scientific studies and concludes in part that there is a consistent pattern of increased risk for glioma (a malignant brain tumour,) and acoustic neuroma with the use of both cell phones and cordless phones. In twenty-one chapters of the new report, 29 independent scientists and health experts from 10 countries reviewed new research papers (from 2006 to 2011) regarding possible risks from wireless technologies and electromagnetic fields. The group hold 10 medical degrees (MDs), 21 PhDs, and three MSc, MA or MPHs. Among the authors are three former presidents and five full members of the Bioelectromagnetics Society (BEMS). One distinguished author is the Chair of the Russian National Committee on Non-Ionizing Radiation. Another is a Senior Advisor to the European Environmental Agency. Dr. David Carpenter, co-editor of the report states: *“There is now much more evidence of risks to health affecting billions of people world-wide. The status quo is not acceptable in light of the evidence for harm.”*¹¹

The special case for Smart phones

It is important to point out that none of the research conducted to date on cell phones and health effects was conducted using the new generation smart phones. These phones have advanced computing ability utilizing powerful data processors giving a wide range of applications not possible on a normal cell phone. For example, currently in Victoria the roll-out of the controversial smart electricity grid promises to enable the home owner to be able to remotely monitor electricity use and control household appliances through a smart phone which will be an essential part of the smart grid electricity system.

The result of all this increased technology is the ability to transmit and receive information at high rates. This means that depending on how the phone is used, it could give higher exposures to the user. This may be an issue considering data that finds that the use of a typical smart phone can generate around 24 times more mobile data traffic than a conventional mobile phone.¹² So, if the evidence for conventional cell phones health risks are real, are these risks amplified for smart phone use? At the moment it is not possible to say simply because the research has not yet been done but this would certainly suggest that steps to reduce radiofrequency exposures from smart

⁹ Al-Sibbbai, A., Too much cell phone usage could affect your health, Dec 12, 2012,

<http://www.saudigazette.com.sa/index.cfm?method=home.regcon&contentid=20121227147265>

¹⁰ Moskowit, J., School of Public Health, Univ. Calif., PRLOG press release, Jan 3, 2012,

<http://www.prlog.org/12052898-cell-phone-radiation-safety-limits-are-not-adequate-to-protect-public-health.html>

¹¹ Bioinitiative Working Group, Bioinitiative 2012 Report Issues New Warnings on Wireless and EMF, Jan 7, 2012, <http://www.businesswire.com/news/home/20130103006502/en/BioInitiative-2012-Report-Issues-Warnings-Wireless-EMF>

¹² AMTA, Smartphones are a dominant technology in the lives of Australians,

<http://www.amta.org.au/articles/Smartphones.are.a.dominant.technology.in.the.lives.of.Australians>

phone usage are a sensible precaution.

SAR Ratings and the importance of the Cellsafe reduction factor

A cell or smart phone's SAR rating, or its Specific Absorption Rate, is a measure of the amount of radiofrequency (RF) energy absorbed by the body when using the handset. As a rough guide the lower a phone's SAR level, the lower the level of RF absorbed by the body part (such as the head) closest to the transmitting phone. When purchasing a phone it is advisable to try and choose a phone with the lowest SAR level and there are a number of Internet sites available for this purpose. For example, *techland.time.com* lists the 10 highest and lowest smart phone emitters.¹³ And *cnet.com* lists the 20 highest and lowest cell phones sold in the U.S.¹⁴

It stands to reason that choosing the lowest SAR rated phone, either a conventional cell phone or smart phone will mean less exposure, depending on how the phone is used. An effective way to further reduce direct RF exposure from cell or smart phone are the use of Cellsafe phone covers. This has been verified by EMC Technologies, the only NATA accredited laboratory capable of testing phone radiation emissions in Australia. The technical director of EMC technologies has stated that the Cellsafe case was the only product to reduce radiation emission levels in the range achieved by the Cellsafe case when compared to other products tested by EMC Technologies. Testing has shown up to a 97.4% reduction of SAR without affecting the phones operation.

This writer has also seen a demonstration of the Cellsafe RF reduction effect and wholeheartedly recommends their use as an essential part of the recommendations listed in this paper. For further information see: <http://www.cellsafe.com.au/>

Cordless DECT phones

The same health risks apply to cordless phone handsets, designated as *Digital Enhanced Cordless Telecommunications* (DECT) as with conventional cell phones where the handset antenna is held close to the head. However there are additional concerns with many cordless phones designated as DECT that are of extra concern.

- 1) Unlike cell and smart phones that adjust their power output to be the lowest necessary to maintain communications with the nearest tower (APC- adaptive power control), many DECT cordless phone handsets just transmit at a maximum power level.
- 2) The main handset cradle base station for many DECT phones constantly transmits at max power as long as the base station is plugged into mains power. This normally is 24/7. When this is placed by a bedside table the constant pulsing RF emissions can interfere with the sleep/awake cycle leading to insomnia and other related symptoms such as fatigue. For that reason this type of phone should not be in bedroom areas.¹⁵

For these reasons, if a cordless phone is needed choose one with APC and which will power down when not in use. Recommended here is the Siemens ECO DECT phone that has these features. However, remember that as long as the handset is held next to the head there is RF exposure and so keep conversations brief and to the point. For further information see: <http://www.easyecoblog.com/416/siemens-eco-dect-green-cordless-phones/>

¹³ <http://techland.time.com/2011/06/01/smartphone-radiation-the-10-highest-and-10-lowest-emitters/4/>

¹⁴ <http://reviews.cnet.com/cell-phone-radiation-levels/>

¹⁵ Maisch, D., Medical warnings needed on DECT cordless phone use, *J. Aust. Coll. Nutr. & Env. Med.* Vol. 25 No. 2 Aug. 2006, <http://www.emfacts.com/download/dect.pdf>

Australia's official policy on mobile phone use

If the topic of this paper was based on evidence of possible hazards of a pharmaceutical drug the accumulated evidence to date would be significant enough to trigger well publicized public health warnings. However, to date, this has not been the case with cell phones. However, the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) has issued a fact sheet on mobile phone and health effects that gives practical advice on mobile phone use¹⁶, but then blunts that message with a bold statement right at the top of the fact sheet that states: *There is no clear evidence in the existing scientific literature that the use of mobile telephones poses a long-term public health hazard (although the possibility of a small risk cannot be ruled out).*

Now, it is highly debatable to conclude that it is just a "small risk". Agreed that it might be a small risk for the individual, depending on their frequency of mobile phone use, but when you consider the millions of users Australia wide that can equate to a major public health crisis for society. This possibility should trigger a precautionary health policy to help reduce that overall risk.

Further on in the ARPANSA Fact Sheet it is stated that "[s]ome research has indicated that non-thermal effects resulting from low-level RF exposure may also occur. However, the existence of these effects and their implications has not been sufficiently established to allow for them in the Standard."

In other words, ARPANSA's advice is framed within the strictures of the official standards that were set in place years ago. For a standard that is supposed to be health based, to continue to ignore the accumulating evidence for harm, such as is detailed in the Bioinitiative Report 2012, can no longer hold any credence as a good public health policy.

A recommended precautionary public health policy for cell phone, smart phone and cordless phone use.

- Use a wired land line whenever possible
- Use the phone's speaker phone facility
- Use text messaging
- Use a hands-free device
- When carrying the phone (when not turned off) avoid keeping it next to the body.
- When pregnant avoid carrying a phone next to your abdomen.
- Avoid using your phone in areas with a weak signal as the phone will have to power up (APC) to maintain contact with the nearest tower.
- Children, who have smaller and thinner skulls, should limit cell phone use
- Never sleep with an active phone by the bedhead, or under the pillow.

¹⁶ Users concerned about the possibility of health effects can minimise their exposure to the RF emissions by: limiting the duration of mobile telephone calls, making calls where reception is good, using a 'hands-free' attachment or speaker options, or by texting. Given the lack of any data relating to children and long term use of mobile phones, and their potentially long life-time use of them, ARPANSA recommends that parents encourage their children to limit their exposure by reducing call time, by making calls where reception is good, by using hands-free devices or speaker options, or by texting.

- Keep the phone away from your head with a minimum of 15mm as recommended by Apple in the user manual page 6 iPhone and 25mm by Blackberry.
- Purchase the lowest SAR rating phone for your needs.
- Purchase a Cellsafe RF reducing case to further lower SAR levels
- If needing a DECT cordless phone, purchase one that powers down when not in use, such as the Siemens ECO DECT cordless phone.
- Don't use the phone inside a vehicle or enclosed space as the phone may have to increase power if there is poor reception.

About the author

Don's interest in this issue goes back to the early 1990's when he was a science writer for Senator Robert Bell in Tasmania. As a result of increasing inquiries to Bell's office about telecommunications issues, in 1996 he was asked to compile a background report titled *Mobile Phones and Their Transmitter Base Stations: The Evidence For Health Hazards. Hazards - A local Government and Community Resource Document*. This was tabled in the Parliament by Senator Bell in April 1996.

In 1998 Don was appointed to the Standards Australia committee specifically established to update the Australian telecommunications exposure standard to accommodate new technology. His involvement in the standard setting process eventually led him to becoming a PhD candidate at the University of Wollongong. His thesis, which was accepted in 2010, examined the history of telecommunications standard setting and how the process has been manipulated by military and industry vested interests to the detriment of adequate public health protection. It is available at:

http://www.emfacts.com/download/The_Procrustean_Approach.pdf

He has also published two papers on cell phone and cordless phone health issues.

http://www.emfacts.com/download/mobile_use.pdf

<http://www.emfacts.com/download/dect.pdf>

He has attended an international conference on mobile phone biological effects in Moscow, Russia. http://www.emfacts.com/download/moscow_conf.pdf

He has also written an analysis of problems with the Australian research effort into possible cell phone health issues:

http://www.emfacts.com/download/A_Machiavellian_Spin_Sept_2010.pdf

He is currently a consultative committee member on the powerfrequency standard setting group established by the Australian Radiation Protection and Nuclear safety Agency (ARPANSA). He is also a member of the Australasian College of Nutritional & Environmental Medicine (ACNEM) where he gives presentations on electromagnetic health & safety to medical practitioner seminars.