

Bypassing Peer Review: Motorola's influence on mobile phone research in Australia (Or: Beware of Mickey Mouse Reviews)

Don Maisch - February 24, 2004

In October 2003 I had the good fortune to be able to attend the Annual Conference of the Australian Radiation Protection Society, held in Hobart. I was particularly interested in attending a presentation titled: "A Review of RF Bioeffects Studies Relevant to the Use of Mobile Phones by Children", compiled by Ken Joyner (Motorola Australia) and Joe Elder (Motorola Florida Research Labs USA).

Ken Joyner, the key Motorola representative at the conference has served for many years on the NH&MRC's expert committee which directs cellphone research funding in Australia. He was a longstanding member of the Standards Australia TE/7 Committee: Human Exposure to Electromagnetic Fields, and more recently on the ARPANSA¹ committee that set the current Australian Radiofrequency/Microwave human exposure standard. He is regarded by the cellphone companies as Australia's foremost authority on the industry's health problems and has represented Motorola and the Australian cellphone industry on several international standards-setting bodies. His advice to the NH&MRC gives him expert input into the NH&MRC's recently created "Australian Centre for Radiofrequency Bioeffects" in Melbourne that will be directing cell phone research in the future.

Co-author of the review, Joe Elder was formerly employed at the U.S. Environmental Protection Agency (EPA) for many years before retiring in the late 1999 to accept a position with Motorola. While previously in the employ of the E.P.A. Elder was a signatory to a statement of concern from scientists from the federal government's Radiofrequency Interagency Work Group (RFIAWG) who has primary responsibility for RF radiation for various civilian federal agencies.

The statement expressed concerns over 14 issues in the RF standard as it related to adequately addressing human health and safety.²

Elder's later views on mobile phone RF research, as a Motorola employee, were expressed at the June 2003 Bioelectromagnetics conference in Hawaii where he unsuccessfully proposed discontinuing research on cell phone radiation due to cost and because there were no credible findings.³

Motorola's corporate review, presented by Joyner at the Hobart conference examined research papers that included studies of radiofrequency exposure of laboratory animals during early life to young adulthood. The point of the review was to identify studies pertinent to an assessment of the effects of RF exposure on the developing nervous system of children.

¹ Australian Radiation Protection and Nuclear Safety Agency

² *U.S. Government group Identifies 14 Issues To Be Addressed in Revision of ANSI/IEEE RF/MW Exposure Standard*, MicrowaveNews, Vol. XIX, No. 4, July/August 1999.

³ Private discussions with a Bioelectromagnetics Society member.

That is: studies relevant to children's use of mobile phones. Two reasons for this concern are the child's developing nervous system and the long period of exposure. ⁴

The Motorola review examined a number of studies describing the results of RF exposure on the developing nervous system and the results of long-term, including lifetime exposure. However the review has dismissed as irrelevant all adverse findings which have not been "independently replicated".

Replication is a controversial issue in mobile phone health research and it isn't a clear-cut matter at all. This type of research needs to be conducted in well-equipped laboratories with specialised exposure systems and million dollar budgets. – And it is only the mobile phone industry that has the money to finance that research. When research is funded almost entirely through grants from the industry, that opens up the possibility of undue influence and control over the design and outcomes of the research.

Of course "Failure to replicate" may mean that the original research clearly answered the question and no further research along that path was warranted. But with the cellphone industry "holding the purse strings" it could also mean a line of research found effects that were not to the liking of the funding organisation. In other words, "failure to replicate" can also mean that the industry declined to follow up an adverse finding while giving the impression that there were faults in the original protocols.

At the same time as Motorola dismisses these un-replicated findings, the industry is keen to promote those results which they believe demonstrate "No effect".

But "No effect" studies are rarely replicated either and logically, they should not be weighted or treated in any different way to adverse findings. However we see major press conferences called by the companies or their industry associations to announce isolated "No Effect" findings, while adverse findings are ignored or dismissed by industry spokesmen as "Not replicated" ... and with the insinuation that they are not relevant.

The editor of the Journal of Bioelectricity, Andrew Marino, expressed a scientific criticism of this problem in 1979:

"Negative findings do not vindicate the position of those who claim that the hazards are nonexistent . . . The lesson of the literature is that some situations will probably result in biological effects, and others will probably not. . . Obviously both conclusions can be true simultaneously, and the truth of one does not imply the falsity of the other. . . To ignore them is both intellectually dishonest - and foolhardy."⁵

To cut a long story short, Motorola's review of the existing scientific 'body of evidence' found no effect on the young lab animals after RF/MW exposure at SAR⁶ levels in excess of what was claimed would be experienced in the brains of children while using mobile phones.

⁴ Elder JA, Joyner K, *A Review of RF Bioeffects Studies Relevant to the Use of Mobile Phones by Children*, ARPS-28 Conference, Hobart Function and Conference Centre, 26-29 October 2993.

⁵ New Ecologist Interview with Andrew Marino, then editor of "The Journal of Bioelectricity, January 1979. As reported in "Fields of Conflict: The EMF Health Hazard Controversy", compiled by D. Maisch, August 1995.

⁶ Specific Absorption Rate - the amount of energy absorbed, usually expressed in Watts per kilogram

It concluded that “The RF literature contains a number of reports addressing the “children’s issue,” that is, studies of laboratory animals, including non-human primates, exposed during periods of nervous system development. The results of these studies provide information to assess potential health effects of mobile telephony emissions on children and these results should be evaluated before considering further research needs.”⁷

The implication of this review is that the established scientific literature has adequately addressed the issue of children using mobile phones and has not found any evidence of harmful effects - and so further research may not be necessary. And of course why spend scarce research funds investigating an area already adequately covered by the established literature.

What the mobile phone industry does, as this Hobart conference presentation aptly demonstrates, is to set a different standard of credibility for papers which it considers to favour its position as against those which suggest we should be more prudent and wary about allowing children unrestricted use of mobile phones. The Motorola review weighs its own non-effect / non-replicated studies as much heavier in terms of credibility to those conducted by independent researchers at various universities when they find adverse effects.

Far more relevant to the question of credibility than replication is the potential for conflicts of interest. This is always much greater in scientific research that is funded by, and conducted for, a wealthy, narrow focussed business sector, such as telecommunications, where billions of dollars are at stake.

Peer Review

As of October 2003 Motorola’s review consisted of a growing collection of papers, notes and slides, that may, or may not, go on to be written up and presented to a peer-review journal for possible publishing. However as it is being presented at a scientific conference on radiation/health issues by an Australian expert in radiation issues there is the implicit impression for the audience that it is accurately reflecting the “the weight of national and international scientific opinion”, to be quoted with authority. In effect it takes on the persona and weight of a peer reviewed paper without having to undergo the rigorous path of being evaluated by an expert Journal editorial review board.

Now, lets imagine for the moment that the Motorola review is one day written up as a paper and submitted to a suitable Journal’s peer review committee for possible publishing. What points would they most likely consider in their evaluation?

* The possibility of a conflict of interest as expressed by the International Committee of Medical Journal Editors: To quote:

“Conflict of interest exists when an author (or the author’s institution), reviewer, or editor has financial or personal relationships that inappropriately influence (bias) his or her actions. . . . The potential for conflict of interest can exist whether or not an individual believes that the relationship affects his or her scientific judgement. Financial relationships . . . are the most

⁷ Elder JA, Joyner K (as above)

easily identifiable conflicts of interest and the most likely to undermine the credibility of the journal, the authors, and of science itself.”⁸

The ICMJE statement would certainly be relevant considering that Motorola has previously signed a multi million dollar contract with Walt Disney to tap the 6 to 12 year old “customer electronics market”. New ‘kids orientated’ products include a range of wireless phones, including the ability to download images of Mickey Mouse, Donald and Goofy onto their phone screens.^{9 10}

Our peer review committee may view with concern the danger of Motorola, in effect, co-opting the Journal (if they publish the paper) into giving ‘scientific credibility’ for Motorola’s business dealings with Walt Disney. The paper’s conclusion – that there is no evidence of biological harm to children who use mobile phones – is conveniently compatible with these financial arrangements.

* Our committee may also note that this problem was addressed in the July 2003 National Conference “Conflicted Science” sponsored by the Centre for Science in Public Interest (CPSI) in the US. The conference examined how the increasing commercialisation of science is undermining science itself.¹¹

Journalists, researchers, and university professors from a wide range of fields (from environmental planning to paediatrics to criminal justice) recounted how corporate money has corrupted or stifled their disciplines. The conclusion of the conference was that we can no longer trust what is presented to us as “science,” not even when it comes from what appear to be independent sources. Non-profit organizations, public universities, and health charities, all too often dependent on corporate money, have become the messengers for corporate interests.¹² Investigations by the CSPI has shown that “There is strong evidence that researchers’ financial ties to chemical, pharmaceutical, or tobacco manufacturers directly influence their published positions in supporting the benefit or downplaying the harm of the manufacturer’s product”.¹³

* Our committee should note that the papers referenced in the Motorola review are of limited relevance simply because they do not address the ‘real world’ situation when an antenna is held close to the head of a mobile phone user - creating a high rate of energy absorption within the head (SAR)¹⁴ caused by the high electric fields at the antenna tip and feed point.¹⁵ In this situation, levels varying between 50-90 percent of the phones transmitted energy can be absorbed directly into the brain and converted to heat.¹⁶ This creates “hot spots” within the brain that can actually exceed the exposure standards.¹⁷ In relation to children and hot spots, Professor Michael Kundi at the University of Vienna notes a special concern. A child’s skull is not only thinner than a typical adult’s but it most likely has different dielectric

⁸ *Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication*, International Committee of Medical Journal Editors, <http://www.icmje.org/index.html#peer>, page 8, November 2003

⁹ *Wireless Notes*, Microwave News, Vol.22, No.4, page 7, July / August 2002

¹⁰ *A Mickey Mouse Policy*, Microwave News, Vol.22, No.3, page 19, May / June 2002

¹¹ <http://www.bcaction.org/Pages/SearchablePages/2003Newsletters/Newsletter79D.html>

¹² *ibid.*

¹³ <http://www.cspinet.org/integrity/>

¹⁴ Specific Absorption Rate: The amount of power, in Watts, that is absorbed in a gram of tissue.

¹⁵ *Cellular Telephone Russian Roulette: A Historical and Scientific Perspective*, Robert Kane, Vantage Press, New York, page 26-27, 2001

¹⁶ *ibid.* page 8, 2001

¹⁷ *ibid.* page 10, 15

properties because it has more blood vessels – it also contains many more stem cells, which can form blood cells.¹⁸ These vulnerable young cells would be within the near field region on the antenna and prone to high level SARs and the formation of hot spots due to that proximity.

Any review of possible mobile phone bioeffects that ignores the hot-spot issue is like a review on Malaria that fails to discuss the mosquito!

When asked at the ARPS conference about the possibility of hot spots forming inside children's brains when using a mobile phone issue, Ken Joyner did not deny the possibility but simply stated the industry formula that "For mobile phone compliance purposes SARs are averaged over 1 or 10 grams of tissue."¹⁹

That may be fine for Motorola's compliance purposes, so that they can legally sell phones, but averaging away the problem does not eliminate it. This avoids addressing valid health concerns over possible damage due to excessive selective heating of brain tissue. It is misinforming the purchaser as to the relevance to safety of the SAR listing of mobile phone emission levels provided at point of sale.

* The review also refers to Motorola funded research findings from Ross Adey, published in 1999 and 2000 as suggesting there are no adverse effects because there were actually fewer brain tumours amongst the lifetime RF exposed rats compared to a similar group that received a carcinogen alone.²⁰

The fact that the RF exposed rats had significantly fewer brain tumours may initially look like good news for Motorola but as Adey has himself pointed out, his research findings showed a non-thermal bioeffect acting directly on DNA from exposure to RF.

"Since we are dealing here with epigenetic²¹ actions of the fields at the cusp of the complex balance between DNA damage and DNA repair, the important conclusion is not whether tumor numbers were increased or decreased, but that there was clearly a tissue interaction with the fields"²²

When Motorola's Joe Elder referenced Adey's work as demonstrating "no-effect" at the Bioelectromagnetics Society meeting in Quebec, Canada in 2002, Adey tore the Motorola claims apart.²³

Yet a year later, the company is still including them to bolster its case.

¹⁸ More Reasons Children May Be at Risk, Microwave News, Vol.22, No.4, page 13, July / August 2002

¹⁹ ARPS-28 Conference (as above) K Joyner responding to a question after his presentation. 29, October 2003

²⁰ Adey WR et al. (2000) Cancer Research, Vol. 60, page 1857-1863

²¹ Epigenetic carcinogenesis is defined as occurring in cells that have already suffered DNA damage but are not in unregulated proliferation. They are mutated and are considered to be cancer cells. We all have millions of such but fortunately not millions of cancers. For them to produce a cancer, there must be a second phase of **PROMOTION** by an additional agent, chemical or physical. A promoter typically acts **REPEATEDLY AND INTERMITTENTLY** for a considerable portion of the lifetime of the individual.

²² As stated in a letter from Ross Adey to Dr. Dick Jostes, Senior Program Officer, Board on Radiation Effects Research, National Academy of Sciences, Washington DC, July 31, 2002

²³ Email correspondence with Ross Adey, November 20, 2003

* In Adey's latest review paper, "Brain interactions with RF/microwave fields generated by mobile phones" he details a number of significant effects from mobile phone use, including damage to the Blood-Brain-Barrier.²⁴ This later paper not mentioned in the Motorola review.

* As for the conclusions of the Motorola Review Ross Adey has stated that:

"I know of no cell phone studies dealing with effects of juvenile use. What might be expected after months or years of daily exposure to these stimuli? Specifically, what may be the long term effects in areas such as social adjustment many years after adolescent exposure? In the absence of needed research, who would be so bold as to say that long term exposures have no cumulative effects and are harmless?"²⁵

* The 'final straw' for our peer review committee may well be to discover that the Adey papers incorrectly referenced in Motorola's review in the first place are themselves not yet replicated! When Adey's team asked Motorola for further funding to do a replication study they were refused. Motorola then confiscated all the essential exposure equipment, including field generators and exposure chambers to ensure that Adey's team could not pursue any further studies. Motorola also made it clear to Adey's team that they would not spend more money on their TDMA pulsed field studies.²⁶

Considering the above criticisms on the Motorola review, its conclusion as to the scientific literature adequately addressing the issue of children's use of mobile phones is fundamentally flawed. It would not stand up to an impartial critical peer review evaluation without a substantial re-writing. Therefore it is surprising to have such a review still being presented at a scientific conference when it's use of data was discredited a year earlier at the BEMS conference in Canada.

Influencing public policy

If the Motorola review is also presented to policy makers at the NH&MRC and the researchers at the newly created "Australian Centre for Radiofrequency Bioeffects" a possible resultant influence in their forthcoming research activities is possible. After all - why question the experts - and waste scarce research funds on a health issue already addressed in the scientific literature!

In Conclusion: A precautionary approach

The Motorola review's conclusions as to a lack of scientific evidence of possible harm to children using mobile phones ignores a large body of expert opinion calling for a precautionary approach when it comes to children and mobile phone use.²⁷

It is unfortunate that we now see an attempt by the cell phone industry and so-called expert groups to re-define the precautionary principle /approach into one that conveniently sidesteps the issue of mobile phone use by children²⁸.

²⁴ Brain interactions with RF/microwave fields generated by mobile phones", The International Encyclopaedia of Neuroscience, in press

²⁵ Email correspondence with Ross Adey, November 20, 2003

²⁶ Email correspondence with Ross Adey, January 8, 2004.

²⁷ Maisch D, Children and Mobile Phones... is there a health risk? The case for extra precautions, JACNEM Vol. 22 No 2 page 3-8, Aug 2003.

²⁸ Maisch D. "NEWSPEAK: Redefining the Precautionary Principle for the Cellphone Industry", <http://www.emfacts.com>. Jan 28, 2004.

This new “sanitised” industry version focuses instead on “the development of mobile phone technology”²⁹ by defining cell phone precautionary measures simply as “carrying out further research ...together with monitoring scientific developments and publishing its findings...are adequate steps in the current context of precautionary measures.”³⁰ By using this new definition the cell phone industry can now claim that they are following a precautionary approach and there is no need to limit cell phone use by anybody!

No matter which definition one uses, if the current warnings of possible long-term biological harm to young mobile phone users prove to be true, it will be our children who will ultimately pay the price in later adult life.

And for Walt Disney, if the well being of their young customers is truly a concern, they should consider taking their Mickey out of the cell phone industry.

²⁹ http://www.nrp.org/press/release_statements/2004/response_statement_2_04.htm

³⁰ <http://www.amta.org.au/default.asp?Page=30>