



# Children and Mobile Phones ... Is There a Health Risk? *The case for extra precautions*

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*Children may be far more vulnerable to health effects from exposure to mobile phone microwave radiation than adults.*

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## Introduction

On March 3<sup>rd</sup>, 2003, the US Environmental Protection Agency (EPA) proposed new guidelines for evaluating cancer risks to children, on the grounds that children may be 10 times more vulnerable than adults to cancer risks from exposure to a wide range of chemicals. This is the first time the EPA has officially taken into account the differences between adults and children when assessing cancer risks from chemical exposure. The EPA views the question of chemical exposure as so significant, that it has written a separate guidance paper on the risks of cancer to children, concerned that exposure to mutagenic chemicals may be significantly more dangerous to the young.<sup>1</sup>

At first, this may seem irrelevant to children's use of mobile phones, until it is realised that there is also a large body of scientific evidence, some of which is examined in this paper, that indicates children may be far more vulnerable to health effects from exposure to mobile phone microwave radiation than adults.

The EPA's new proposed guidelines should serve as a wake-up call. They underscore that extra care must be given to protect the young when available evidence indicates an increased risk to health from an environmental agent, be it chemical, microwave or other possible factors.

The possibility that children may incur increased risk to health from mobile phone use is of concern, considering that today the fastest growing group of mobile phone users are children and young people. This growth is actively encouraged by professional advertising campaigns from the mobile phone industry, in which they extol the indispensability of the phones to their life styles. It would seem that in the mad rush to maximize corporate profits they have 'thrown caution to the wind' in favour of short-term profits. There are long-term costs, however, and those are the focus of this paper.

With the continuing worldwide mobile phone advertising blitz, produced by the same transnational public relations corporations that previously gave us such delightful cartoon characters as 'Joe Camel' for the tobacco industry, no words of warning are heard. However, within the scientific community there is a growing chorus of expert voices that are urging caution, because if there are adverse health effects from mobile phone use, it will be the children who are in the front line, and

who may pay the highest price. For the sake of our children's future health, we need to seriously heed these voices and limit children's use of mobile phones.

## Case History: Walt Disney Co.

An unfortunate example of how youth are deliberately being targeted was investigated by the New York based technical newsletter *Microwave News*. In the May/June 2002 issue it was reported that in November 2000, just as ABC News was about to air a TV program expressing concern over the use of mobile phones by children, the Walt Disney Co. announced that it would no longer allow its cartoon characters to be used to market mobile phones. ABC is a subsidiary of Disney. A Disney spokesperson said at the time that the new policy would remain in effect "until there is reliable evidence establishing the absence of any [health] risks," and that "the well-being of our customers is our first priority".<sup>2</sup>

At first this seemed like a responsible position by Disney, but it was exposed as a sham in the July/August 2002 issue of *Microwave News*:

"Disney and Motorola are teaming up to tap the 6- to 12-year-old customer electronics market. They will roll out the first products — a two-way radio and a 2.45 GHz cordless phone — in the fall, with others to follow next year. Motorola states that the walkie-talkies will have a range of up to two miles. And in late July 2002, Disney announced that it is launching a service which will allow customers in Taiwan to download images of Mickey, Donald and Goofy onto their phone screens. In 2000, Disney pledged not to licence its characters for use on cell phones "until there is reliable evidence establishing the absence of any [health] risks." Disney recently reaffirmed this commitment to *Microwave News*.<sup>3</sup>

The only conclusion one can draw here is that somehow, while all the scientists doing research on mobile phone health effects cannot yet come up with the goods on health risks, Disney has found "reliable evidence establishing the absence of any [health] risks". Fortunate news for Disney, for now they can proceed with their new telecommunications venture, in partnership with the paragon of truly independent research, Motorola.

This constitutes a serious conflict of interest if Motorola is providing 'evidence of safety' while at the same time entering into a major capital venture with Disney.

To be fair to Disney, their executives would only have been provided with the opinions of Motorola about the safety of children using mobile phones and may be blissfully unaware that the science is not as black and white as they have been led to believe. Considering that Disney has a significant influence on many millions of children, the possibility of harm being inflicted on these children by their wireless products must be given serious consideration.

## Statements of concern from the scientific community

1... In 1999, as a result of public concerns about possible health hazards from mobile phone technology, the UK Government formed the **Independent Expert Group on Mobile Phones (IEGMP)** to examine possible effects of mobile phones and transmitter base stations. This group was headed by Sir William Stewart, the famous British biochemist and president of the British Association for the Advancement of Science. What made the Stewart Inquiry unique, was that it was made up almost entirely of biomedical specialists — and so it was able to focus many years of acquired specialist knowledge on the problem.

Their report, “Mobile Phones and Health”, was released in April 2000. In regards to the use of mobile phones by children the IEGMP stated:

“If there are currently unrecognized adverse health effects from the use of mobile phones, children may be more vulnerable because of their developing nervous system, the greater absorption of energy in the tissues of the head and a longer lifetime of exposure. In line with our precautionary approach, we believe that the widespread use of mobile phones by children for non-essential calls should be discouraged. We also recommend that the mobile phone industry should refrain from promoting the use of mobile phones by children.”<sup>4</sup>

Sir William said at a science conference at Glasgow University in September 2001, that mobile phone makers often presented their products in advertisements as essential “back to school” items for children. Such adverts were irresponsible, said Sir William. He added: “They are irresponsible because children’s skulls are not fully developed. They will be using mobile phones for longer, and their effects won’t be known for some time to come. Mobile phone technology has been led by the physical sciences. My own view is we ought to be doing more work on the potential biological effects.”<sup>5</sup>

In January 2003, Professor Lawrie Challis who replaced Sir William Stewart as chairman of the Mobile Telecommunications Health Research team, (The Stewart Committee) restated the Committee’s views on children and mobile phone use. In an interview with a UK paper, Prof Challis mentioned that he was worried by the level of mobile phone use among children. He said, more needed to be

done towards educating youngsters about limiting the time they spend on phones.<sup>6</sup>

2... Concerns about children using mobile phones was specifically mentioned in a recent report (July, 2002) by the **Science and Public Policy Institute**, based in Arlington, Virginia, USA. The institute was founded by Dr George Carlo, who formerly ran the U.S. wireless industry’s \$28 million research program into the possible health risks of cell phone use.

The report “Proposals for Supplementary Funding” states on page 4:

“Special concern for children followed from the research. Studies showed that radiation penetrated deeper into the heads of teenagers and children resulting in more exposure to potentially harmful radio waves than adults; the type of genetic damage that was found — micronuclei in human blood — is more likely to occur in growing tissue undergoing mitosis, such as growing brain tissue in children; the wireless industry had targeted children as a growth market and were succeeding in increasing cell phone usage among children and teenagers.”

The report also recommends the “development of informational materials for children and their parents, regarding the science and solutions that can be used in schools.”<sup>7</sup>

3... On December 8<sup>th</sup> 2000 a statement was issued by the **German Academy of Paediatrics** advising parents to restrict their children’s use of mobile phones. They advised that all mobile phone users keep conversations as brief as possible but that additional precautions are appropriate for children in view of “special health risks” associated with their growing bodies.<sup>8</sup>

4... On July 31, 2001, Wolfram Koenig, the new head of the **Bundesamt für Strahlenschutz**, which is the federal authority for radiation protection in Germany, stated in an interview in the *Berliner Morgenpost* that “Parents should take their children away from that technology [mobile phones]”. Mr Koenig, also a member of Germany’s Greens party, said that “Some people are very sensitive to radiation,” and urged companies not to target children in their advertising campaigns.<sup>9</sup>

5... In a statement delivered at an Australian Senate Inquiry meeting in 2000: **CSIRO Telecommunications and Industrial Physics** chief, Gerry Haddad, warned that the new telecommunications exposure standards being drafted neglected to provide a high enough level of protection, particularly in relation to children. Mr Haddad said, “Restrict use of mobile phones to children for essential purposes ... A precautionary principle would seem to be a good idea:”. Dr Haddad complained that the CSIRO’s view had been rejected in the formulation of new emission standards that stopped short of advising that children be restricted in their mobile phone use.<sup>10</sup>

6... A day after the release of a Danish mobile phone study titled “Cellular Telephones and Cancer – a Nationwide Cohort Study in Denmark”, a **panel of scientists in Denmark** debated the findings and questioned the validity of the study conclusions. Panel chairman Professor Albert Gjedde, a brain specialist, also expressed concern that children could be more vulnerable, because their brain cells are still growing and therefore EMF had the potential to lead to more serious brain damage than in adults. He advised extreme caution in accepting assurances of safety, and suggested Denmark reduce children’s exposure to mobile phone emissions to a minimum.<sup>11</sup>

7... In a statement from Olle Johansson, Assoc. Professor, **The Experimental Dermatology Unit, Department of Neuroscience, Karolinska Institute, Sweden. (September, 2001)**. “... Already in 1996, I started to warn in public of the effects on microwave irradiation on children through their use of mobile telephones. The debate has also very much focused on the responsibility regarding ads and products directly aimed for children, and here in Sweden great alarm has been raised around the propositions to even develop and sell cell phones for the ages up to 5 years.”<sup>12</sup>

8... In a statement from Sianette Kwee, Professor, **Department of Medical Biochemistry, University of Aarhus, Denmark.** (Member of the Editorial Board of *Bioelectrochemistry*. Danish expert representative in the European Union’s COST 281 project ‘Potential health effects from Emerging Wireless Communication Systems’, Basic Research Group.)

Fields of research: bioelectrochemistry : electroporation - electrochemistry of biological systems, bioelectromagnetics: biological effects of environmental electromagnetic fields (extremely low frequency /ELF and microwave /MW), on cell growth in human amnion cells.

“Our studies showed that there was a significant change in cell growth in these cells after being exposed to EMF fields from both power lines (ELF) and from mobile phones (MW). These biological effects were greatest in young and vigorously growing cells, but much less in old cells. These results tell us, that e.g. microwave fields from mobile phones can be expected to affect children to a much greater degree than adults.”<sup>13</sup>

9... Statement from Dr. Gerard Hyland of the **University of Warwick, Coventry, England, and the International Institute of Biophysics, Neuss-Holzheim, Germany.** Excerpt (dealing specifically with children and mobile phone use) from his Report for the STOA Committee of the EU.

‘The Increased Vulnerability of Pre-adolescent Children’:

“Pre-adolescent children can be expected

to be (potentially) more at risk than are adults - as recognised in the Report of the UK Independent Expert Group on Mobile Phones (the Stewart Report) - for the following reasons:

- Absorption of microwaves of the frequency used in mobile telephony is greater (particularly at 900 MHz) in an object about the size of a child's head - the so-called head resonance - than in an adult's, whilst, in consequence of the thinner skull of a child, the penetration of the radiation into the brain is greater than in an adult.

- The still developing nervous system and associated brain-wave activity in a child (and particularly one that is epileptic) are more vulnerable to aggression by the pulses of microwaves used in GSM than is the case with a mature adult. This is because the multi-frame repetition frequency of 8.34 Hz and the 2 Hz pulsing that characterizes the signal from a phone equipped with the energy-saving discontinuous transmission (DTX) mode, lie in the range of the alpha and delta brain wave activities, respectively. The fact that these two particular electrical activities are constantly changing in a child until the age of about 12 years, when the delta-waves disappear and the alpha rhythm is finally stabilized, means that a child's brain must be anticipated to be *doubly* vulnerable to interference from the GSM pulsing.

- The increased mitotic activity in the cells of developing children makes them more susceptible to genetic damage.

- A child's immune system, whose efficiency is degraded by radiation of the kind used in mobile telephony, is generally less robust than that of an adult, so that the child is less able to cope with any adverse health effect provoked by (chronic) exposure to such radiation.”<sup>14</sup>

**10...** Dr Hyland was also an adviser in a **small unpublished Spanish study**, examining changes in brain activity after a child uses a mobile phone. The study, by Dr Michael Klieseisen from the Neuro Diagnostic Research Institute in Marbella, Spain found that a single call lasting just two minutes, can alter the natural electrical activity of a child's brain for up to an hour afterwards. It was also found that the microwaves penetrated deep into the brain and not just around the ear.

The subjects were an 11-year-old boy and a 13-year-old girl. Using a CATEEN scanner, linked to a machine measuring brain wave activity, researchers were able to make photographic images of the changes in brain electrical activity.

In a newspaper interview, Dr Hyland said that he finds the results “extremely disturbing”. “It makes one wonder whether children, whose brains are still developing,

should be using mobile phones,” he adds. “The results show that children's brains are affected for long periods even after very short-term use. “Their brain wave patterns are abnormal and stay like that for a long period. This could affect their mood and ability to learn in the classroom if they have been using a phone during break time, for instance. We don't know all the answers yet, but the alteration in brain waves could lead to things like a lack of concentration, memory loss, inability to learn and aggressive behaviour.”

“If I were a parent I would now be extremely wary about allowing my children to use a mobile even for a very short period. My advice would be to avoid mobiles.”

Dr Michael Klieseisen, who conducted the study, said: “We were able to see in minute detail what was going on in the brain. We never expected to see this continuing activity in the brain. We are worried that delicate balances that exist - such as the immunity to



infection and disease - could be altered by interference with chemical balances in the brain.”<sup>15 16</sup>

**11... Professor Leif Salford and co-workers, authors of study on possible nerve damage from mobile phone radiation**, warn about the possible implications for teenagers. Prof Salford and colleagues at Lund University in Sweden exposed 12- and 26-week-old rats to two hours of microwave radiation, comparable to that of a GSM mobile phone. Rats of this age were chosen because their developmental age is comparable to that of human teenagers. “The situation of the growing brain might deserve special concern,” the authors wrote, “since biological and maturational processes are particularly vulnerable”.

After fifty days, the rat brains were examined for damage. The study found that the microwave exposure was associated with leakage of albumin through the blood-brain

barrier and neuronal damage that increased according to the amount of exposure. Although the numbers of rats in the study was small the authors stated that “the combined results are highly significant and exhibit a clear dose-response relation”. They cautioned: “We cannot exclude that after some decades of often daily use, a whole generation of users may suffer negative effects as early as middle age.”<sup>17</sup>

In an interview with the BBC News, Prof. Salford said that “A rat's brain is very much the same as a human's. They have the same blood-brain barrier and neurons. We have good reason to believe what happens in rat's brains also happens in humans.”<sup>18</sup>

“If this effect was to transfer to young mobile users, the effects could be terrifying. We can see reduced brain reserve capacity, meaning those who might normally have got Alzheimer's dementia in old age could get it much earlier.”<sup>19</sup>

Prof. Salford then cautioned that mobile phone users should not be alarmed by the findings as it is one observation, in one laboratory with a small number of animals, and needs to be repeated. “Nevertheless, it is strong enough to merit more research into this area.” He then added: “Perhaps putting a mobile phone repeatedly to your head is something that might not be good in the long term... Maybe we should think about restricting our use of mobile phones”<sup>20</sup>

Prof. Salford said on the BBC Radio program “You and Yours” on 5 February 2003, that he would not allow his children to use a mobile phone other than for a real emergency and he himself chooses not to use one other than when absolutely necessary. He said he rated the reality of brain damage as a “probability rather than a possibility”.<sup>21</sup>

**12... WHO Director General on children & mobile phone use:** Dr Gro Harlem Brundtland, former Prime Minister of Norway and Director General of the World Health Organisation (WHO), favours a precautionary approach to the use of mobile phones and has publicly discouraged children from using mobile phones.

Brundtland advises everyone to limit the amount of time on the phone, but she does not think there is enough scientific evidence to issue a formal warning. Brundtland says that she gets a headache whenever she uses a mobile phone. “In the beginning I felt warmth around my ear. But the discomfort got worse and turned into a headache every time I used a mobile phone.” Making shorter calls does not help, she said in a newspaper interview. The interview was featured on the front page of ‘Dagbladet Norge’ and was later picked up by the Swedish press.<sup>22</sup>

13... Professor Michael Kundi, from the **Institute of Environmental Health, University of Vienna, Austria**, (writing in the July/August 2002 issue of *Microwave News*): "I read with great interest your report on the Rome meeting on the possible risks of mobile phones to children (MWN, M/J02). My institution at the University of Vienna, and Physicians for a Healthy Environment (a non-government organisation), have produced an information booklet on Mobile Phones and Children, sponsored by the Austrian Greens Party. It discourages the use of mobiles by children.

"The arguments are similar to those that have been put forward by others. In addition, however, it relies on a fact that has not been previously stressed and, to my surprise, appears not to have been discussed in Rome. A child's skull is not only thinner and surely has different dielectric properties because it has more blood vessels – it also contains many more stem cells which can form blood cells.

"Hence, if RFMW radiation has an influence on the development of cancer, its effects will be greater for two reasons: first, the most vulnerable cells are only millimeters from the antenna. (To my knowledge, nobody has calculated the SAR within the bone marrow of the skull.); and second, the earlier in life a malign transformation occurs, the more likely it will result in a clinical malignancy."<sup>23</sup>

14... **Letter from Norbert Hankin environmental scientist, US Environmental Protection Agency**, replying to George Carlo, head of the Radiation Protection Project.

"Thank you for sending the e-mailed press release announcing the new project investigating the possibility of a relationship between the use of wireless phones and various health risks... I suggest that another area of concern that should not be overlooked due to the potential impact on the quality of life of future adults (currently children), is the possible impact of wireless telecommunications technology and products on the learning ability of children.

"The growing use of wireless communications by children and by schools, will result in prolonged (possibly several hours per day), long-term exposure (12 or more years of exposure in classrooms connected to computer networks by wireless telecommunications) of developing children to low-intensity pulse modulated radiofrequency (RF) radiation.

"Recent studies involving short-term exposures have demonstrated that subtle effects on brain functions can be produced by low-intensity pulse modulated radiofrequency (RF) radiation. Some research involving rodents has shown adverse effects on short-term and long-term memory. The concern is that if such effects may occur in young children, then even slight impairment of learning ability over years of education may

negatively affect the quality of life that could be achieved by these individuals, when adults. The potential effect on learning of exposure from telecommunication devices used by children should be considered for study by the Radiation Protection Project."

Norbert Hankin, Environmental Scientist, US Environmental Protection Agency (EPA), Office of Radiation and Indoor Air (6609J), 1200 Pennsylvania Avenue, NW, Washington, DC 20460".<sup>24</sup>

15... **The French Government** on March 1, 2002 reiterated an advisory to users of mobile phones, reminding them that, as a precaution, parents should tell their children to limit the use of wireless phones, and that when using an earpiece, pregnant women should keep the phone away from their bellies and teenagers should keep it away from their developing sex organs.<sup>25</sup>

16... On October 9, 2002 twenty two medical doctors of the **German Interdisciplinary Association for Environmental Medicine (Interdisziplinäre Gesellschaft für Umweltmedizin e. V. (IGUMED))** met in order to discuss their concerns about the increasing level of public ill-health that they considered to be a consequence of the increasing levels of high-frequency-radiation (radiofrequency/microwave radiation) from telecommunications technology.

Some of the conditions that they saw as a consequence of the technology were: learning, concentration and behavioural disorders (e.g. Attention Deficit Disorder ADD); extreme fluctuations in blood pressure, which are harder to influence with medications; heart rhythm disorders; heart attacks and strokes among an increasingly younger population; brain-degenerative diseases (e.g. Alzheimer's); and epilepsy, leukaemia and brain tumors.

Along with many recommendations they specifically called for a ban on mobile phone use by small children and restrictions on use by adolescents.<sup>26</sup>

17... **The British Medical Association's Board of Science & Education** has issued an interim report: "Mobile Phones and Health" on 24th May 2001. The report states that individuals should limit their exposure to Radio Frequency Radiation (RFR) and adopt a precautionary approach that specifically includes limiting children's use of mobile phones.<sup>27</sup>

18... Advice of the **Russian National Committee on Non-Ionizing Radiation Protection (RNCNIRP)** on the use of mobile phones. The RNCNIRP offers the following advice on the safe use of mobile phones. These recommendations are based on the precautionary principle of the World Health Organization, published scientific and medical studies, reviews and recommendations by

scientific groups, and the expert opinions of RNCNIRP members.

1. Children under the age of 16 should not use mobile phones.
2. Pregnant women should not use mobile phones.
3. Those suffering from the following diseases and disorders should not use mobile phones: neurologic diseases such as neurasthenia, psychopathy, psychosteny, and all neurosis with asthenic, obsessional hysterical disorders and reducing of mental, physical activity, memory loss, sleep disorders, epilepsy and epileptic syndrome, epileptic predisposing.
4. The duration of calls should be limited to a maximum of three minutes, and after making a call the user should wait a minimum of 15 minutes before making another call. The use of headsets and hands-free systems is strongly encouraged. Manufacturers and retailers of mobile phones should include the following information together with the engineering specifications: all of the above recommendations regarding use; all relevant health and epidemiological data on mobile phones; together with the radiation exposure levels associated with the phone and the name of the measurement lab.<sup>28</sup>

19... **From the article "Microwave And Radiofrequency Radiation Exposure: A Growing Environmental Health Crisis?"** by Cindy Sage of Sage Consultants. Excerpt from the web site of the San Francisco Medical Society. "Are Children at Any Greater Risk? Probably, since children are growing and their cells are turning over faster than adults. Many of the studies linking power lines and cancer show that children are particularly sensitive to low EMF levels from chronic exposure and develop leukemias in response. The use of "kiddy mobile phones" with a button for mom and a button for dad are terrible ideas at this point."<sup>29</sup>

20... **Government ministers of both Thailand and Bangladesh** have expressed concerns about the use of mobile phones by children.

In Thailand, Purachai Piemsomboon, whose campaign against vice has barred teenagers from pubs and night spots, cited a Japanese study, which he said concluded that mobile phones emitted radiation harmful to brain cells and nerves, especially of young people. He said that if teenagers continued to ignore the warning, a law to ban their use might become necessary.<sup>30</sup>

In Bangladesh, the Environment Minister mentioned the possibility of passing laws to ban mobile phones for children under sixteen to protect them from exposure to radiation that could damage their brains. He outlined the plan at a conference of doctors and

scientists in the capital, Dhaka. Regulations are also planned to stop companies from selling mobile phones to children. Families will be encouraged to keep them away from children. Bangladesh's mobile phone companies have criticised the proposal, saying there is no scientific basis for the measure.<sup>31</sup>

## What the Australian Authorities say

In 2001, the Australian Communications Authority (ACA\*) distributed to every school in the nation a pamphlet titled *Mobile phones. ...your health and regulation of radiofrequency electromagnetic radiation*. In relation to possible health effects, the pamphlet states only that "the weight of national and international scientific opinion is that there is no substantiated evidence that using a mobile phone causes harmful health effects."<sup>32</sup>

This pamphlet is quite misleading because it gives a very limited viewpoint on so-called 'scientific opinion'. When referring to "the weight of national and international scientific opinion" it is in fact referring to the opinion and radio frequency exposure guidelines set by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) – guidelines recently incorporated into the Australian Radiofrequency (RF) Exposure Standard. What is omitted from the pamphlet, however, is an admission of the limited relevance of ICNIRP guidelines on actual human exposures.

The ICNIRP guidelines are largely based on high-level, short-term animal exposure studies conducted to determine exposure limits set to avoid immediate hazards to health (such as heating of body tissue, called a thermal effect) from high level exposures. To quote:

"Most of the established biological effects of exposure to RF fields are consistent with responses to induced heating. Most studies examined endpoints other than cancer, many examined physiological and thermo-regulatory responses, effects on behaviour and on the induction of lens opacities (cataracts) and adverse reproductive outcome following acute exposure to relatively high levels of RF fields. **Very few studies are relevant to the evaluation of RF exposure on the development of cancer in humans**".<sup>33</sup>

The ACA pamphlet would be more truthful if it added to its conclusion: "There is no substantiated evidence that using a mobile phone causes harmful health effects— *because the necessary research has not yet been done.*"

Is it really good science for the ACA and other government departments to depend upon high-level, short-term animal exposure studies to give assurances of safety with the use of mobile phones, especially where children are concerned?

Most importantly, ICNIRP does not examine the possibility of other non-thermal health effects arising from long-term, low-level radiofrequency/microwave exposure, such as from using a mobile phone for years. As

such, it is scientifically irrelevant to the issue. From a PR viewpoint however, statements like "the weight of national and international scientific opinion" do sound impressive at first glance.

In 1995, Dr Ross Adey, one of the world's most respected and senior research scientists commented on the 'weight of national and international scientific opinion' by stating:

"The laboratory evidence for non-thermal effects of both ELF [power 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."<sup>34</sup>

On July 6, 2003 the Federal Health Minister, Kay Patterson, announced the creation of a new Centre of Research Excellence in Electromagnetic Energy, administered by the National Health & Medical Research Council (NH&MRC), to study the possible health risks from mobile phone use. At the press conference announcing the Centre, Professor Judith Black, Co-chair of the NH&MRC's expert committee on electromagnetic energy, stated that "studies carried out around the world had produced little evidence of any harmful effects caused by mobile phones".<sup>35</sup>

On May 7, 2003 the Australian Mobile Telecommunications Association (AMTA) posted on its web site the following statement, titled "Mobile phone use by children: The use of mobile phones by children has been a subject of interest in the media, from government regulators and within the scientific community. However, there is no known basis for singling out children for concern and the scientific evidence does not indicate significant differences in the absorption of electromagnetic energy from mobile phones between adults and children. The weight of scientific opinion is that there is no evidence of any adverse health effects from the radio frequency energy emitted by mobile phones. Furthermore, the scientific evidence does not indicate the need for special precautions for either adults or children in the use of mobile phones. This is the view of the World Health Organisation (WHO) and other leading experts and health authorities internationally."<sup>36</sup>

## In Conclusion

What we have is an ideological battle between an increasing number of well-qualified experts, calling for a precautionary approach to safeguard our children's health, versus the corporate might of a billion-dollar industry with concerns based solely on maximizing corporate profits at the possible expense of our children's future wellbeing.

It is of concern that many national and regulatory committees, charged with the responsibility of protecting public health, take their advice on health issues from expert radiation advisers who in many cases are also in the employ of telecommunications corporations. This may be justified in some

situations, as most radiation experts would of course work within the industry. However, it must be clearly acknowledged that such an arrangement places the risk of bias high on the agenda of these committees.

The outcome of this conflict may not be known for many years, until today's young mobile phone users are well into their adulthood. By then, if the warnings of health hazards prove to be true, irreversible damage to the health of many of these individuals will have been done.

Every parent who is tempted to allow unrestricted mobile phone use by their children, needs to ask themselves: "Is it worth the risk?"

As for Walt Disney Co., if the well-being of their customers is truly their first priority, they must seriously re-consider moving into telecommunications. If nothing else, do they dare take the risk of litigation should the warnings of health hazards be found to be real?

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