

# Mobile Phones and Health - New Leaflets in Wales

## Scientific inaccuracies

The Welsh Assembly Government has produced two leaflets advising children and young people in Wales about mobile phone use<sup>1</sup>.

However, twenty leading international scientists and health professionals have written about their concerns and they give scientific reasons why they consider so much of the information within the leaflets to be incorrect or misleading.

## Contravention of current guidance from the UK Chief Medical Officers

Also, the new leaflets advise children as young as seven that it is all right to use mobile phones as long as the calls are short. In contrast, the existing UK Department of Health advice is that young people are strongly advised by the UK Chief Medical Officers to: *use mobile phones for essential purposes only.*<sup>2</sup> Although this is mentioned at the end of each leaflet, the children are likely to pay more attention to the first pages which advise them that they may safely make short calls. The leaflets also deny the accepted view that children are likely to be more at risk. These earlier statements within the leaflets both contravene the current advice from the Chief Medical Officers.

## Four main points of inaccuracy

The leaflets state:

**1. *'The evidence available to date shows that using mobile phones does not appear to cause health problems.'* and *'Most of the results from work that scientists have done so far do not suggest that radio signals make us ill.'***

Leading scientists have made the following comments:

*There is strong evidence for an increased risk for brain tumours at least after 10 years of use – the statement is false.* Dr Gerd Oberfeld

*This is totally wrong based on epidemiological and clinical data (both based on humans), not to mention the numerous lab animal experiments. Every answer given within the Welsh leaflet is scientifically wrong.* Dr Adamantia Fragopoulou and Professor Lukas Margaritis

*The type of radiation emitted by these gadgets has been linked to cancer, neurological diseases, impairments to immune function, and neurological function.... We also know that this kind of radiation impacts DNA, leading to possible mutations and cancer development, as well as affecting fertility and reproduction, causing a dramatic decline in sperm count.* Dr Olle Johansson

*Many labs have documented the molecular damage due to RF (radio-frequency) signals, and the damage to DNA is believed to be the first step on a road that can lead to cancer.* Dr Martin Blank

*It is not true that the great majority of scientists conclude that there are no adverse effects from exposure to mobile phones. While most of us see the need for further study, the evidence to date strongly suggests that long term use results in an elevation in the risk of brain tumors, tumors of the auditory nerve and parotid gland, but only on the side of the head on which the phone is used. Those who deny these conclusions often have major conflicts of interest. Professor David Carpenter*

*There is enough preliminary evidence and concern from scientists and public alike that cell phone use seems to be associated with illnesses of various sorts and the bottom line is that this needs to be further investigated from the public health perspective. If as with smoking, things are ignored, we will regret it years down the line and may well see an increase in cell phone-related illnesses. Dr Santosh Kesari*

*I am deeply concerned to see the description of the science on cell phones and health as depicted in these children's pamphlets. In fact, there is clear and compelling human evidence that heavy use of cell phones for a period of a decade or more consistently doubles the risk of malignant brain tumors in all studies ever conducted on this topic that have been able to follow people for a decade. ...experimental studies show that cell phone radiation causes a host of biological impacts in living cells, ranging from damaging DNA to producing a host of biological markers that are associated with increased risks of cancer, chronic neurological disease, including possibly Alzheimer's and autism. Dr Devra Lee Davis*

*WRONG! Many studies have documented adverse biological and health effects for people who use wireless devices or live near cell phone antennas and are exposed to microwave radiation. Dr Magda Havas*

*The evidence from independent studies strongly disagrees with the statement "most of the results...do not suggest that radio signals make us ill", which results were mainly by mobile phone industry funded studies. Professor Christos Georgiou*

*There are many publications showing health effects of radiofrequency radiations. Approximately half of all published papers show such effects.<sup>3</sup> This apparent discrepancy can be accounted for various conditions of exposure, because non-thermal RF effects are critically dependent on various parameters and also biological variables.<sup>4, 5, 6</sup> Dr Igor Belyaev*

*About half of the scientific papers published on mobile phone radiation reported biological effects. We simply cannot ignore these reports and conclude that exposure to the radiation has no health risk. Dr Henry Lai*

**2. 'When we use a mobile phone it sends out radio signals.' 'A radio or television uses the same kind of signals.'**

Scientists have made the following comments in response:

*The statement seems misleading. Dr Gerd Oberfeld*

*This is a false analogy. The radio or television transmitter is usually many miles away and the signal is very weak when it gets to you. On the other hand, when you use a mobile phone, the transmitter is held right against the head, where the signal strength may be hundreds or thousands of times greater.* Dr Andrew Goldsworthy

*There is significant difference in carrier frequencies and modulation between signals from mobile phones and radio-TV-signals. Therefore health effects should be evaluated separately.* Dr Igor Belyaev

*Radios and televisions do not send out radio waves.* Dr Henry Lai

*These reported characteristics are not equivalent to each other. For example a television or a radio antenna is kilometres away and the amount of radiation someone is receiving is not the same as a mobile phone.* Dr Stelios Zinelis

*The emission emitted by mobile phones fall in the microwave frequency range. These are modulated at extremely low frequency and hence carry multiplicity of messages.* Professor J. Behari

*The statement is not true, because the mobile phone signals are GSM modulated and emit at different frequencies.* Dr Adamantia Fragopoulou and Professor Lukas Margaritis

**3. 'Body heating is normal and happens with exercise or when we have a hot bath. The heat from mobile phones is less than this.'**

Scientists have commented:

*Microwaves cause biological damage at exposures below those which cause heating. The scientific literature contains thousands of such studies. Therefore the comment about heating has failed to mention that mobile phones may be causing damage without there being any heating effect.* Dr Sarah Starkey

*The increase in blood circulation in the skin (turning it red) carries away the excess heat in both cases (mobile phones and hot baths) but it does not carry away the DNA and protein molecules that are damaged by the RF signals.* Dr Martin Blank

*...heating has nothing to do with the overall biological and health effects and in addition and most crucially, the radiation is very-very close to the brain when using the mobile phone.* Dr Adamantia Fragopoulou and Professor Lukas Margaritis

*The mobile phone industry is adamant that there are only heating effects from mobile phones. But they are fundamentally wrong. In quantum spin chemistry, it has been known for thirty years that the production of free radicals and their reactions are influenced by electromagnetic fields at 10 millionth of that needed for the heating effects. Free radicals will react by the spin states of the free electrons, it is not to do with thermal energy. It is not the job of the Department of Health to protect industry.* Professor Denis Henshaw

*There are scientific data indicating that some biological effects of the radio waves emitted by mobile phones are non-thermal i.e. not caused by heating. Dr Henry Lai*

**4. ‘Current research does not suggest that young people are especially sensitive to mobile phone signals.’ and ‘...tests done so far do not show that there is more risk for us (children) at the moment.’**

The assertion in the leaflets that children are not more at risk is contrary to other international advice based on the known science, including that of the UK’s Department of Health and Chief Medical Officers. It is widely acknowledged in the scientific world that the potential damage to children is likely to be greater than for adults. The UK Government’s Independent Expert Group on Mobile Phones (IEGMP 2000),<sup>7</sup> known as the Stewart Report, states: *1.53 ...children may be more vulnerable because of their developing nervous systems, the greater absorption of energy in the tissues of the head ... and a longer lifetime exposure.*

The World Health Organisation, as a cause for concern, currently refers to children having: *a potentially longer lifetime of exposure.*<sup>8</sup>

In 2005 Sir William Stewart stated: *If there are risks – and we think that maybe there are – then the people who are going to be most affected are children, and the younger the children, the greatest the danger.*<sup>9</sup> Also, in April this year Professor Lawrie Challis, who was vice chairman of the Stewart Report and is also the former chairman of the government-funded Mobile Telecommunications and Health Research programme (MTHR), again repeated his advice that children under 12 years of age should not use mobile phones at all.<sup>10</sup> The views of these eminent UK government scientists are being ignored.

The Stewart Report referred to children absorbing more electromagnetic radiation than adults – that a 5 year old absorbs 60% more. Gandhi in 1996 described greater penetration of radiation into the head of a 5 or 10 year old child compared to an adult.<sup>11</sup> Other studies have since indicated around a 50 to 100 per cent increase in absorption by children, such as in the work of de Salles and others.<sup>12</sup> Also, earlier this year Christ *et al.* published a paper showing that exposure of the bone marrow of children may exceed that of adults by about a factor of 10.<sup>13</sup>

A study in 2009 by Hardell and Carlberg found that using a mobile phone for the first time under the age of 20 was associated with a much greater increased risk (2.5 to 6.2 fold greater) of developing a malignant astrocytoma in the brain or tumour of the acoustic nerve, than for those who first used a phone over the age of 20.<sup>14</sup>

Leading scientists have made the following comments:

*These are not scientific statements and are just nonsense. See our paper from last year that shows that young persons are more sensitive*<sup>14</sup>. Professor Lennart Hardell

*Hardell et al. 2006 observed an increased risk for malignant brain tumors in young adults when the first use of mobile phones started before the age of 20. Dr Gerd Oberfeld*

*Yes, we know that children are more sensitive to mobile phone signals. Please refer to our paper<sup>12</sup>. ...the SAR (Specific Absorption Rate) is 50 to 100 per cent higher in the children's brain, in comparison to the adults. Many authors have shown similar results.* Professor Alvaro de Salles

*The body of young people is under development (especially their brain), which is controlled by a combination of very delicate and complex metabolic processes. These processes are dependent on many crucial molecular factors, one of which is oxidative stress, which is one of the main mechanisms of health damage by electromagnetic radiation.* Professor Christos Georgiou

*Our recent data provided possible mechanism for increased sensitivity of children to mobile phone microwaves based on effects in stem cells.*<sup>4</sup> Dr Igor Belyaev

*Current research suggests that young people are especially sensitive to mobile phone signals and shows that there is more risk for children, same thing happens with other types of toxins.* Alfonso Balmori

*A study from Niels Kuster's group indicates that certain parts of a child's head absorb more energy from mobile phone compared to an adult head. One particular area of concern is the bone marrow in the skull.* Dr Henry Lai

-----

Other countries are giving their children advice which is far more precautionary. For example, the French Government is in the process of introducing legislation to prohibit children using mobile phones at school and to ban all advertising of mobile phones to under 14 year olds<sup>15</sup>. Also, all mobile phones sold in France will include a warning that overuse may damage health, and the SAR (Specific Absorption Rate) must be stated.<sup>16</sup>

The children of Wales deserve to have high quality health advice which is scientifically correct. Unfortunately, the leaflet for primary schools effectively endorses and therefore encourages the use of mobile phones by children as young as seven. This contravenes the current advice from the UK Chief Medical Officers that young people should only make essential calls because they are considered to be more at risk.

In the light of the above scientific opinions about several inaccuracies, the leaflets need to be redrafted or withdrawn. Young people should be provided with accurate and balanced precautionary advice. Such guidance would be valuing the health and well-being of young people.

-----

**Thank you to the following scientists and doctors who have given their feedback on the leaflets:**

Alfonso Balmori. Biologist and ornithologist, independent researcher on the effects of phone radiation on living organisms. Valladolid, Spain.

Professor Dr. J. Behari, PhD. Professor, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, India.

Dr Igor Belyaev, PhD. Associate Professor, Cancer Research Institute, Slovak Academy of Sciences, Bratislava, Slovak Republic.

Dr. Martin Blank, PhD. Associate Professor of Physiology and Cellular Biophysics, Columbia University, New York, USA.

Professor Dr. David O. Carpenter, MD. Director, Institute for Health and the Environment, University at Albany, New York, USA.

Dr. Devra Lee Davis, PhD. Director of the Center for Environmental Oncology, University of Pittsburgh Cancer Institute, Pittsburgh, USA.

Dr. Adamantia Fragopoulou, PhD. Department of Cell Biology and Biophysics, Panepistemiopolis, Athens, Greece.

Professor Dr. Christos Georgiou, PhD. Professor of Biochemistry, Biology Department, University of Patras, Patras, Greece.

Dr. Andrew Goldsworthy, PhD. Lecturer in Biology (retired), Imperial College of Science, Technology and Medicine, London, UK.

Professor Dr. Lennart Hardell, PhD. Professor of Oncology and Cancer Epidemiology, Department of Oncology, University Hospital, and Department of Natural Sciences, Örebro University, Örebro, Sweden.

Dr. Magda Havas, PhD. Associate Professor, Environmental and Resource Studies, Trent University, Ontario, Canada.

Professor Dr. Denis Henshaw, PhD. Professor of Physics, University of Bristol, Bristol, UK.

Dr. Olle Johansson, PhD. Associate Professor, Department of Neuroscience, Karolinska Institute, Stockholm. Professor, The Royal Institute of Technology, Stockholm, Sweden.

Dr. Santosh Kesari, MD, PhD. Director, Neuro-Oncology, Department of Neurosciences, Moores Cancer Centre, University of California, San Diego, La Jolla, CA, USA.

Dr. Henry Lai, PhD. Research Professor, Department of Bioengineering, University of Washington, Seattle, USA.

Professor Dr. Lukas Margaritis, PhD. Professor of Cell Biology and Biophysics, Panepistemiopolis, Athens, Greece.

Dr. Gerd Oberfeld, MD. Public Health Officer, Public Health Department, Salzburg, Austria.

Professor Dr. Alvaro de Salles, PhD. Professor, Electrical Engineering Department, Federal University of Rio Grande do Sul, Porto Alegre, Brazil.

Dr. Sarah Starkey, PhD. Neuroscientist, formerly Department of Neuropharmacology, GlaxoSmithKline, UK.

Dr. Stelios Zinelis, MD. Hellenic Cancer Society, Cefallonia, Greece.

## References:

- <sup>1</sup> Mobile phone guidance for primary and secondary school children in Wales  
<http://wales.gov.uk/topics/health/protection/environmental/publications/mobilephones/?lang=en>
- <sup>2</sup> [http://www.dh.gov.uk/en/publicationsandstatistics/Publications/PublicationsPolicyandGuidance/DH\\_4123979](http://www.dh.gov.uk/en/publicationsandstatistics/Publications/PublicationsPolicyandGuidance/DH_4123979)
- <sup>3</sup> A. Huss *et al.* Source of funding and results of studies of health effects of mobile phone use: systematic review of experimental studies, *Cien Saude Colet* 13(3): 1005-1012, 2008.  
<http://www.scielosp.org/pdf/csc/v13n3/22.pdf>
- <sup>4</sup> E. Markova, L. Malmgren and I. Belyaev. Microwaves from mobile phones inhibit  $53BP_1$  focus formation in human stem cells more strongly than in differentiated cells: possible mechanistic link to cancer risk, *Environ Health Perspect* 118: 394-399, 2010.  
<http://ehp03.niehs.nih.gov/article/fechArticle.action?articleURI=info%3Adoi%2F10.1289%2Fehp.0900781>
- <sup>5</sup> I.Y. Belyaev and Y.G. Grigoriev. Problems in assessment of risks from exposures to microwaves of mobile communication, *Radiats Biol Radioecol* 47(6): 727-732, 2007.
- <sup>6</sup> I. Belyaev. Non-thermal biological effects of microwaves: Current knowledge, further perspective, and urgent needs, *Electromagnetic Biology and Medicine* 24(3): 375-403, 2005.
- <sup>7</sup> Independent Expert Group on Mobile Phones (IEGMP) 2000.  
<http://www.iegmp.org.uk/report/index.htm>
- <sup>8</sup> <http://www.who.int/mediacentre/factsheets/fs193/en/>
- <sup>9</sup> <http://news.bbc.co.uk/1/hi/health/4163003.stm>
- <sup>10</sup> <http://www.timesonline.co.uk/tol/news/uk/article1294717.ece>  
<http://www.dailymail.co.uk/news/article-1268017/Mobile-phone-debate-reignited-MTHR-launches-30-year-study-health-risks.html>
- <sup>11</sup> Gandhi O.P. *et al.* Electromagnetic Absorption in the Human Head and Neck for Mobile Telephones at 835MHz and 1900MHz. *IEEE Transactions on Microwave Theory and Techniques* 44(10): 1884-1897, 1996.
- <sup>12</sup> De Salles A.A. *et al.* Electromagnetic Absorption in the Head of Adults and Children Due to Mobile Phone Operation Close to the Head. *Electromagnetic Biology and Medicine* 25(4): 349-360, 2006.
- <sup>13</sup> Christ A. *et al.* Age-dependent tissue-specific exposure of cell phone users. *Phys Med Biol* 55: 1767-1783, 2010. [http://iopscience.iop.org/0031-9155/55/7/001/pdf/pmb10\\_7\\_001.pdf](http://iopscience.iop.org/0031-9155/55/7/001/pdf/pmb10_7_001.pdf)
- <sup>14</sup> Hardell L. and Carlberg M. Mobile phones, cordless phones and the risk of brain tumours. *Int J Oncol* 35(1): 5-17, 2009.
- <sup>15</sup> [http://translate.googleusercontent.com/translate\\_c?hl=nl&ie=UTF-8&sl=fr&tl=en&u=http://www.legifrance.gouv.fr/affichTexte.do%3Bjsessionid%3D7BF4DDA31D22882183A2F8A340A8D423.tpdjo07v\\_2%3FcidTexte%3DJORFTEXT000022470434%26dateTexte%3D20100801&prev=\\_t&rurl=tr](http://translate.googleusercontent.com/translate_c?hl=nl&ie=UTF-8&sl=fr&tl=en&u=http://www.legifrance.gouv.fr/affichTexte.do%3Bjsessionid%3D7BF4DDA31D22882183A2F8A340A8D423.tpdjo07v_2%3FcidTexte%3DJORFTEXT000022470434%26dateTexte%3D20100801&prev=_t&rurl=tr)  
Article183, L.5231-3 and L.511-5. 12 July 2010
- <sup>16</sup> Assemblée Nationale, Article 72a. 11 May 2010 <http://www.assemblee-nationale.fr/13/ta/ta0458.asp>

August 2010