

# What the experts say: The consensus of scientific opinion

AMTA relies on the expert judgment of independent public health authorities, such as the World Health Organization, for assessments of safety and health impacts.

There is now a large body of research into the health effects of radio frequency electromagnetic fields available to health and regulatory bodies around the world, which is being continually reviewed.

Potential health impacts of radio frequency energy have been studied in great detail over the past 50 years. This has resulted in a substantial body of scientific literature in this field - covering laboratory, clinical and epidemiological research.

Comprehensive reviews of more than 2,900 research publications, including more than 900 studies specifically on mobile phones and base stations, by governments and health authorities continue to find there is no convincing scientific evidence of health effects.

Recent expert assessments confirming the scientific consensus on mobile phone and base station safety include: the Swedish Radiation Safety Authority (2013); UK Health Protection Agency (2012); the Norwegian Institute of Health (2012), Institution of Engineering and Technology (2012); the World Health Organization (2011); the International Agency for Research on Cancer (2011); the International Commission on Non-Ionizing Radiation Protection (2011) and the Health Council of the Netherlands (2011).

When the weight of scientific evidence is considered, as many independent organisations and governments have done, the only reasonable conclusion is there is no established evidence of health effects from mobile phones or their base stations.

Following are excerpts from a selection of independent expert reviews:

Swedish Radiation Safety Authority's eighth report from the Scientific Council on Electromagnetic Fields (2013):

*Subsequent to the last Council report published in 2010, IARC in 2011 classified radiofrequency electromagnetic (RF) fields as possibly carcinogenic to humans (Group 2B) based on an increased risk for glioma and acoustic neuroma (vestibular schwannoma) associated with wireless phone use. Since then, numerous epidemiological studies on mobile phone use and risk of brain tumours and other tumours of the head (vestibular schwannomas, salivary gland) have been published. The collective of these studies, together with national cancer incidence statistics from different countries, is not convincing in linking mobile phone use to the occurrence of glioma or other tumours of the head region among adults.*

Report from the Expert Committee appointed by the Norwegian Institute of Health (2012):



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*The large total number of studies provides no evidence that exposure to weak RF fields causes adverse health effects.*

*It is unlikely that long-term use of mobile phones will cause health risks that are unknown today.*

UK Health Protection Agency's independent Advisory Group on Non-ionising Radiation (AGNIR) (2012):

*Although a substantial amount of research has been conducted in this area, there is no convincing evidence that RF field exposure below guideline levels causes effects in adults or children.*

The Swedish Council for Social Life and Social Research report 'Radiofrequency electromagnetic fields and risk of disease and ill health - Research during the last ten years' (2012):

*Extensive research for more than a decade has not detected anything new regarding interaction mechanisms between radiofrequency fields and the human body and has found no evidence for health risks below current exposure guidelines*

Institution of Engineering and Technology's (IET) Biological Effects Policy Advisory Group (BEPAG) (2012):

*BEPAG has concluded that the balance of scientific evidence to date does not indicate that harmful effects occur in humans due to low-level exposure to EMFs. This conclusion remains the same as that reached in its previous position statements, the last being in May 2010, and our findings have not been substantially altered by the peer-reviewed literature published in the past two years.*

Electromagnetic Fields Committee of the Health Council of the Netherlands report on influence of radiofrequency telecommunication signals on children's brains (2011):

*There is no scientific evidence for a negative influence of exposure to electromagnetic field of mobile telephones, base station antennas or Wi-Fi equipment on the development and functioning of the brain and on health in children. This is the main conclusion of an advisory report the Health Council presented today to the State Secretary of Infrastructure and the Environment.*

World Health Organization fact sheet on electromagnetic fields and public health (2011):

*A large number of studies have been performed over the last two decades to assess whether mobile phones pose a potential health risk. To date, no adverse health effects have been established as being caused by mobile phone use.*

International Commission on Non-Ionizing Radiation Protection, Standing Committee on Epidemiology (2011):

*Although there remains some uncertainty, the trend in the accumulating evidence is increasingly against the hypothesis that mobile phone use can cause brain tumours in adults*



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International Agency for Research on Cancer (IARC) working group evaluation of radio frequency electromagnetic fields (RF EMF) (2011):

*The Working Group concluded that there is “limited evidence” in human beings for the carcinogenicity of RFEMF, based on positive associations between glioma and acoustic neuroma and exposure to RF-EMF from wireless phones. A few members of the Working Group considered the current evidence in humans “inadequate”, therefore no conclusion about a causal association was reached...*

*In view of the limited evidence in humans and in experimental animals, the Working Group classified RF EMF as “possibly carcinogenic to humans” (Group 2B).*



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Latin American Experts Committee on High Frequency Electromagnetic Fields and Human Health (2010):

*We conclude, therefore, that current published RF epidemiological studies have not shown any sizable, incontrovertible and reproducible adverse health effect, and that numerous methodological flaws, along with only the few outcomes examined so far, do not allow for firm conclusions, particularly as it relates to children and to continuous exposure for periods larger than 20 years.*

The European Health Risk Assessment Network on Electromagnetic Fields Exposure (EFHRAN) (2010)

*Overall, in agreement with the conclusions of recent international reports, one can conclude that there are no well-established positive effects of low-level RF exposure (SAR < 2 W/kg). The open questions that can be addressed in animal and cell investigations are mainly related to the possible greater sensitivity of children.*

US Food and Drug Administration (2010)

*Although research is ongoing, the Food and Drug Administration (FDA) says that available scientific evidence - including World Health Organization (WHO) findings released May 17, 2010 - shows no increased health risk due to radiofrequency (RF) energy, a form of electromagnetic radiation that is emitted by cell phones.*

US President's Cancer Panel Report (2010)

*At this time, there is no evidence to support a link between cell phone use and cancer. However, the research on cancer and other disease risk among long-term and heavy users of contemporary wireless devices is extremely limited.*

UK Health Protection Agency (2010)

*There are thousands of published scientific papers covering research about the effects of various types of radio waves on cells, tissues, animals and people. The scientific consensus is that, apart from the*

*increased risk of a road accident due to mobile phone use when driving, there is no clear evidence of adverse health effects from the use of mobile phones or from phone masts.*



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#### Swedish Radiation Protection Authority (2009)

*Overall the studies published to date do not demonstrate an increased risk of cancer related to mobile phone use within approximately ten years of use for any tumour of the brain or any other head tumour.*

#### German expert group on children (Mensch Umwelt Technik) from the Jülich Research Institute (2009)

*Overall, the review of the existing scientific literature does not support the assumption that children's health is affected by RF EMF exposure from mobile phones or base stations.*

#### Five Nordic radiation safety authorities (2009)

*The Nordic authorities agree that there is no scientific evidence for adverse health effects caused by radiofrequency field strengths in the normal living environment at present... The Nordic authorities therefore at present see no need for a common recommendation for further actions to reduce these radiofrequency fields.*

#### US Health Physics Society (2009)

*Currently available evidence shows that use of mobile phones or exposure to their base-station emissions does not cause brain cancer or any other health effect.*

#### French Government (2009)

*The majority of researchers have confirmed, albeit with some caution, the absence of any health risk. There is a near consensus on the harmlessness of mobile phone relays [base stations].*

#### International Commission on Non-Ionizing Radiation Protection's validation of safety guidelines (2009)

*However, it is the opinion of ICNIRP that the scientific literature published since the 1998 guidelines has provided no evidence of any adverse effects below the basic restrictions and does not necessitate an immediate revision of its guidance on limiting exposure to high frequency electromagnetic fields.*

#### The German Mobile Telecommunication Research Programme (DMF) (2009)

*The DMF's findings give no reason to question the protective effect of current limit values. However, as some studies found minimal physiological reactions and indications that children could be more exposed than adults, along with the constantly open question on health risks from long-term exposure for adults and in particular for children, make it necessary to continue dealing carefully with wireless communication technologies.*

Spanish Scientific Advisory Committee on Radiofrequency and Health (CCARS) (2009)

*The use and exposure of adult individuals to waves from mobile telephones over a period of less than 10 years is not associated with an increase in the number of brain tumours. With regard to longer exposure periods in adults or the situation of the child population, there is not sufficient data available and rational use of this tool is to be recommended... As a whole, the national and international committees for protection against RF waves unanimously conclude that recent scientific/ technical breakthroughs do not justify changes in the present RF benchmark levels and exposure limits for the public and for workers.*



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International Commission on Non-Ionizing Radiation Protection's (2009) review of population studies

*Results of epidemiological studies to date give no consistent or convincing evidence of a causal relation between RF exposure and any adverse health effect. On the other hand, these studies have too many deficiencies to rule out an association.*

EU's Scientific Committee on Emerging and Newly Identified Health Risks (2009)

*It is concluded from three independent lines of evidence (epidemiological, animal and in vitro studies) that exposure to RF fields is unlikely to lead to an increase in cancer in humans.*

International Agency for Research on Cancer – World Cancer Report (2008)

*With reference to radio frequency, available data do not show any excess risk of brain cancer and other neoplasms associated with the use of mobile phones.*

The United States Food and Drug Administration (FDA) (2008)

*The weight of scientific evidence has not linked cell phones with any health problems. Cell phones emit low levels of radiofrequency energy (RF). Over the past 15 years, scientists have conducted hundreds of studies looking at the biological effects of the radiofrequency energy emitted by cell phones. While some researchers have reported biological changes associated with RF energy, these studies have failed to be replicated. The majority of studies published have failed to show an association between exposure to radiofrequency from a cell phone and health problems.*

Institution of Engineering and Technology's (IET) Biological Effects Policy Advisory Group (BEPAG) (2008)

*So, whilst there is no strong reason to suppose that mobile phones or their base stations cause tumours, neither is there a solid body of evidence to refute that suggestion. Studies investigating other, longer established, sources of radio frequency fields such as radar, radio and TV, have not found consistent evidence of health effects.*

Swedish Radiation Protection Authority's Independent Expert Group on Electromagnetic Fields (2007)

*Short-term use of mobile phones does not appear to be associated with brain or head and neck cancer risks in adults. However, other outcomes have not been studied, no studies on children or adolescents have been done, and long-term use has not been fully evaluated.*

Finland's Health Risk Assessment of Mobile Communications (HERMO) (2007)

*No evidence of detrimental health effects were obtained in the studies on cell cultures, laboratory animals, voluntary persons, or theoretical modelling.*

UK Government's Mobile Telecommunications and Health Research Programme (2007)

*None of the research supported by the Programme and published so far demonstrates that biological or adverse health effects are produced by radiofrequency exposure from mobile phones.*

EU's Scientific Committee on Emerging and Newly Identified Health Risks (2007)

*The balance of epidemiologic evidence indicates that mobile phone use of less than 10 years does not pose any increased risk of brain tumour or acoustic neuroma. For longer use, data are sparse and any conclusions therefore are uncertain. From the available data, however, it does appear that there is no increased risk for brain tumours in long term users... In conclusion, no health effect has been consistently demonstrated at exposure levels below the ICNIRP-limits established in 1998.*

Irish Government Expert Group (2007)

*So far no adverse short or long-term health effects have been found from exposure to the RF signals produced by mobile phones and base station transmitters. RF signals have not been found to cause cancer.*

WHO review of base stations and wireless networks (2006)

*The accumulated evidence does not establish the existence of adverse short or long term health effects from the signals produced by base station and local wireless networks. In fact, for similar RF exposure intensities (W/m<sup>2</sup>), the body absorbs about 5 times more of the RF energy from FM radio and TV frequencies (around 100 MHz) than from base station frequencies (around 1 – 2 GHz). It is reassuring to note that radio and TV broadcast stations have been in operation for more than 50 years, and health statistics have not demonstrated adverse health consequences.*

Health Council of the Netherlands (2004)

*The committee agreed that there is no reason to revise its recommendations regarding exposure limits as no health problems can be expected at current levels. The Committee also concluded that there are no health-based reasons to limit children using mobile phones.*

Advisory Group on Non-ionising Radiation (2003)



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*The biological and epidemiological evidence does not suggest cancer causation, in particular from mobile phone use, nor any other adverse health effect from radiofrequency exposures at levels below guidelines.*



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Swedish radiation protection authority (2003)

*...while quite a number of new studies have been published within these areas in recent years, the overall scientific assessment has not changed markedly since the Stewart report was published and the conclusions that were formulated at that time are still to a great extent valid.*

Health Council of the Netherlands (2002)

*The electromagnetic field of a mobile telephone does not constitute a health hazard, according to the present scientific knowledge. Therefore, there are no reasons for a revision of the exposure limits.*

American Cancer Society (2001)

*In summary, there is now considerable epidemiological evidence that shows no consistent association between cellular phone use and brain cancer.*

*...the lack of ionizing radiation and the low energy level emitted from cell phones and absorbed by human tissues makes it unlikely that these devices cause cancer.*

Australian Senate Inquiry (2001)

*After an 18 month investigation, the Committee confirmed that there exists no substantiated evidence of health effects from mobile phones that comply with strict safety standards.*

UK Independent Expert Group (Stewart Report) (2000)

*The balance of evidence to date suggests that exposure to RF radiation below NRPB and ICNIRP [international safety] guidelines do not cause adverse health effects to the general population.*

Royal Society of Canada (1999)

*The panel found no evidence of documented health effects in animals or humans exposed to non-thermal levels of radiofrequency fields. The panel recommended that no changes were needed in the existing Canadian exposure standards to protect against non-thermal effects of RF fields.*

## **Additional Information**

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