



## **SECTION 22**

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# **Precaution in Action – Global Public Health Advice Following BioInitiative 2007**

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## I. INTRODUCTION

This section highlights some major milestones in documentation of potential health effects of low-intensity electromagnetic fields and radiofrequency radiation, and subsequent national and international actions taken to address the problem. The categories of response are divided into Publications and Health Agency Advisories, Local and National Country Actions, Expert Research Group and Physicians' Advisories and the formal classification by the World Health Organization International Agency for Research on Cancer for RFR as a 2B Possible Human Carcinogen.

## II. PUBLICATIONS AND HEALTH AGENCY ADVISORIES (2007 – 2012)

### *The BioInitiative Report (2007)*

The BioInitiative Report (1) is a 650+ page report documenting the evidence for bioeffects and adverse health effects (the science and public health consequences of that body of scientific evidence) from electromagnetic field and radiofrequency (microwave) radiation. It was written by an independent international research group to give an overview of what is known of biological effects that occur at low-intensity EMFs exposures (for both radiofrequency radiation RFR and power-frequency ELF-EMF), and various forms of combined exposures that are now known to be bioactive). The Report examines the research and current standards and finds that these standards are far from adequate to protect public health. The report presents solid science on this issue, and makes recommendations to decision-makers and the public.

The BioInitiative Working Group was composed of scientists, researchers and public health policy professionals. In 2007, the Working Group documented information from over 2000 published scientific studies and reviews reporting bioeffects and adverse health impacts of electromagnetic fields and radiofrequency radiation at exposure levels far below current public safety standards that should be considered in the international debate about the adequacy (or inadequacy) of existing public exposure standards.

Eleven chapters documented key scientific studies and reviews identifying low-intensity effects of electromagnetic fields. Sections 16 and 17 were prepared by public health and policy experts. These sections discuss the standard of evidence which should be applied in public health and environmental planning, how the scientific information should be evaluated in the context of prudent public health policy, and the basis for taking precautionary and preventative actions that are proportionate given this evidence.

European Environment Agency (2007)

European Environmental Agency Executive Director Jacqueline McGlade, PhD provided early support for the BioInitiative Report (2007). The Agency's Head of Communications and Corporate Affairs issued a news release on the publication of the BioInitiative Report, and the EEA contributions to it on September 17, 2007, two weeks after the Report was published on the web. It stated (2):

*“A new report raising concerns about the effects of electromagnetic fields (EMF) on human health calls for tougher safety standards to regulate radiation from mobile phones, power lines and many other sources of exposure in daily life. The report, 'Bioinitiative: A Rationale for a Biologically-Based Public Exposure Standard for Electromagnetic Fields' was compiled by the BioInitiative Working Group, an international group of scientists, researchers and public health policy professionals. The EEA has contributed to this new report with a chapter drawn from the EEA study 'Late lessons from early warnings: the precautionary principle 1896–2000' published in 2001.”*

*“The EEA study reviews the histories of a selection of public and environmental hazards, such as asbestos, benzene and PCBs, from the first scientifically based early warnings about potential harm, to subsequent precautionary and preventive measures. Cases on tobacco smoking and lead in petrol are forthcoming.”*

*“Although the EEA does not have specific expertise in EMF, the case studies of public hazards analyzed in the 'Late Lessons from Early Warnings' publication show that harmful exposures can be widespread before there is both 'convincing' evidence of harm from long-term exposures, and biological understanding of how that harm is caused.”*

*“There are many examples of the failure to use the precautionary principle in the past, which have resulted in serious and often irreversible damage to health and environments. Appropriate, precautionary and proportionate actions taken now to avoid plausible and potentially serious threats to health from EMF are likely to be seen as prudent and wise from future perspectives. We must remember that precaution is one of the principles of EU environmental policy.”*

Professor Jacqueline McGlade, Executive Director, EEA.

In the fall of 2007, the EEA Director responded to strong media and industry attention to the BioInitiative Report, defending the EEA's position to declare 'early warnings' appropriate with respect to the evidence on mobile phone radiofrequency radiation and possible health hazards. The Director defended EEA recommendations for prudent public health action, based on the scientific evidence presented in the BioInitiative Report. (3)

*“The BioInitiative report draws attention to some of the emerging evidence of potential harm from the long term effects of non-ionising radiations from electro and magnetic fields (EMF), particularly from the radio frequency (RF) exposures that arise from mobile phone telecommunications.”*

*“The Bioinitiative report, however, is only one of several reports reviewing the risks from the*

*thermal and non-thermal effects of EMF that have been published over recent years.”*

*“These include reports from the NIEHS, the EU, the WHO, the UK National Radiological Protection Board and others. The EEA’s contribution to the BioInitiative report was a chapter on the history and general application of the precautionary principle to a number of well known hazards for which there had been, and in some cases still is, much scientific uncertainty. The chapter summarised the main messages from our report, “Late Lessons from Early Warnings: the Precautionary Principle 1896-2000”, (EEA 2001).”*

*“The point of our chapter for the BioInitiative report was to illustrate how past uncertainties had been dealt with so as to provide lessons that may be helpful in dealing with current hazards for which there is both scientific uncertainty and high stakes, both health and economic.”*

*“It is because this accumulating evidence on RF is of increasing scientific concern, and because the exposure of the public, particularly vulnerable groups, is widespread and generally rising, that we judged it was timely to draw wider attention to the possibly serious hazards from EMF”.*

*“In our judgement, the human and experimental evidence, taken together, is “clear” enough to support using the precautionary principle to justify reducing exposures, where feasible, and to review the evidence for the existing exposure limits, which, as you know, are based on thermal effects only.”*

*EEA Director Jacqueline McGlade to Wolfram Konig, Nov 27, 2007*

#### European Parliament (2007)

In September 26, 2007 Carolyn Lucas, MEP, introduced the topic of the BioInitiative Report recommendations to the European Parliament (4) and asked the European Commission what action the Commission is taking in response to the report, its conclusions and endorsement by the European Environment Agency.

*“As the Commission will be aware, on 31 August 2007 the international BioInitiative Working Group of renowned scientists and public health policy experts published a report called “A Rationale for a Biologically-Based Public Exposure Standard for Electromagnetic Fields (ELF and RF)”.*

*“This report documents evidence that ELF’s are a risk factor for both childhood and adult cancers, and sets out how wireless technologies which rely on RF to send emails and voice communications are thousands of times stronger than levels reported to cause sleep disorders, headaches, problems with memory and concentration and other physical symptoms. It notes the unprecedented levels of exposure to ELF’s being created by the “explosion of new sources” and raises serious scientific concerns over the health risks posed by long-term and cumulative exposure.”*

*“The report concludes that current safety limits regulating the levels of ELF permitted from power lines, mobile phones and other sources are highly inadequate, and that a much more cautious approach should be taken to further deployment of risky technologies.”*

*“The European Environment Agency (EEA) contributed a chapter to the report, concerning the consequences of previous failures to apply the precautionary principle in the face of public and environmental hazards. Following publication of the study the EEA's Executive Director has publicly stressed the importance of precaution where potentially serious future consequences may be involved, and called for actions to reduce exposures to ELF, particularly where vulnerable groups are concerned.”*

*“What action is the Commission taking in response to this report, its conclusions and endorsement by the EEA? Does the Commission agree that the balance of evidence points to the need to revise public safety standards regulating radiation levels from sources of day-to-day ELF exposure, as well as policies on the testing and deployment of new telecommunications technologies?”*

### European Parliament 2008

The European Parliament issued advice on the Communication from the Commission to the Council, the European Parliament and the European Economic and Social Committee regarding the mid-term review of the European Environment and Health Action Plan 2004-2010 ([COM\(2007\)0314](#)). See Appendix A for full text, but in part, it stated:

*21. Is greatly concerned at the Bio-Initiative international report (8) concerning electromagnetic fields, which summarises over 1500 studies on that topic and which points in its conclusions to the health risks posed by emissions from mobile-telephony devices such as mobile telephones, UMTS, Wifi, Wimax and Bluetooth, and also DECT landline telephones;*

*22. Notes that the limits on exposure to electromagnetic fields which have been set for the general public are obsolete, since they have not been adjusted in the wake of Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0Hz to 30 GHz) (9), obviously take no account of developments in information and communication technologies, of the recommendations issued by the European Environment Agency or of the stricter emission standards adopted, for example, by Belgium, Italy and Austria, and do not address the issue of vulnerable groups, such as pregnant women, newborn babies and children;*

*23. Calls, consequently, upon the Council to amend its Recommendation 1999/519/EC in order to take into account the Member States' best practices and thus to set stricter exposure limits for all equipment which emits electromagnetic waves in the frequencies between 0.1 MHz and 300 GHz*

### Pathophysiology Journal Publication - Special Issue on EMF (2009)

As a direct result of the BioInitiative Report, a special, peer-reviewed issue of Pathophysiology (6) was published in March 2009 and contained most of the BioInitiative content (some chapters updated from 2006 to 2009 published works) including a chapter on public health implications of wireless technologies (7). It also extended the scope of coverage to include RF impacts on the blood-brain barrier, effects of cell towers on wildlife, and reproduction effects in animal studies. It provided assurance of the high scientific quality of the BioInitiative Report analysis and conclusions, and buttressed the need for new EMF safety standards in a respected, peer-reviewed scientific journal.

*“Bioelectromagnetics, the study of biological effects of electromagnetic fields (EMF), is an interdisciplinary science with a technical literature that is not easily accessible to the non-specialist. To increase access of the public to the technical literature and to the health implications of the scientific findings, the Bioinitiative Report was organized by an international group of scientists and published online at [www.bioinitiative.org](http://www.bioinitiative.org) on August 31, 2007. The report has been widely read, and was cited in September 2008 by the European Parliament when it voted overwhelmingly that the current EMF safety standards were obsolete and needed to be reviewed. “*

*“DNA shows biological effects at the sub-cellular level that occur at very low EMF thresholds and across frequency ranges of the EM spectrum. Interactions with DNA may account for many of the effects of EMF, and they raise the possibility that genetic damage due to EMF can lead to cancer.”*

*“The brain is exposed to radiation from mobile phone antennas, and laboratory studies show that the radiation causes leakage of the protective blood–brain barrier, as well as the death of neurons in the brain. Radiation emitted from base stations can affect all who are in the vicinity. Epidemiological studies have shown a relation between exposure to mobile phones, base-stations and the development of brain tumors. Some epidemiological studies have significant flaws in design, and the risk of brain cancer may be greater than reported in the published results.”*

*“In addition to the risk of brain cancer, EMF in the environment may contribute to diseases like Alzheimer’s dementia and breast cancer in humans, as well as reproductive and developmental effects in animals in the wild. EMF affects the biochemical pathways and immunological mechanisms that link the different organ systems in our bodies and those of animals. The human body can act as an antenna for RF signals, and a small percentage of the population appears to be so sensitive to EMF that it interferes with their daily lives. In addition to the growing presence of EMF signals in the environment, the complexity of the signals may be important in altering biological responses. These are among the many factors that must be considered in approaching EMF safety issues.”*

Preface, Pathophysiology, Guest Editor Martin Blank, PhD

Media coverage of the Pathophysiology Journal in 2009 highlighted the everyday problems of EMF and wireless exposures in society. For the typical person on the street, the message of the BioInitiative Report and its subsequent contributions to a scientific journal were broken down into examples more familiar to them (8).

*“Public health concerns and scientific evidence for risks from cell phones and other wireless devices is published today in the journal Pathophysiology. International researchers have urged quick precautionary action to address a possible epidemic of brain tumors and many other health risks. Over four billion people around the world now use cell phones. They are rapidly eliminating the use of traditional land-line phones throughout the world. Health researchers from six countries give findings in fifteen (15) chapters covering health risks to humans and wildlife from electromagnetic fields and radiofrequency radiation.”*

*“The global rollout of wireless technologies and devices like cell phones, cordless phones, cell towers (masts) and many other sources greatly increases our EMF exposure in daily life. The enormous popularity of new communication devices that allow email, texting, and access to the Internet from any city street has placed the issue squarely before government agencies like the FDA and the FCC, and also parents and school administrators. Parents must decide whether possible health risks to their children outweigh the convenience of keeping track of them. School officials and teachers care because of disruption and distraction in the classroom from cell phone use. National safety officials in the US face public criticism about highway collisions and road deaths from cell phone use while driving. Federal railway officials are*

*still coping with the problem of illicit texting by US railroad personnel that lead to the catastrophic collision of two trains in Chatsworth, California in 2008 killing 24 and injuring 135 more.”*

Reba Goodman, PhD (Columbia University) commented: *“cells in the body react to EMFs as potentially harmful, just like to other environmental toxins including heavy metals and toxic chemicals. The DNA in living cells recognizes electromagnetic fields at very low levels of exposure, and produces a biochemical stress response.”*

David O. Carpenter, MD, Co-Editor of the BioInitiative Report and Director of the University of Albany, Institute of Health and the Environment concluded: *“the existing FCC and international limits do not do enough to protect people, especially children, from daily exposures to electromagnetic fields and radiofrequency radiation. The existing safety limits did not anticipate these new kinds of technologies affecting the health of people living with and using wireless devices on a daily basis. These effects are now widely reported to occur at exposure levels significantly below most current national and international limits.”*

Brain tumor specialist Dr. Lennart Hardell, MD, PhD works as both an oncologist and a researcher at Orebro University Hospital in Sweden. He is an expert on cell phones and brain tumors.

*“The evidence for risks from prolonged cell phone and cordless phone use is quite strong. For people who have used these devices for 10 years or longer, and when they are used mainly on one side of the head, the risk of malignant brain tumor is doubled for adults and is even higher for persons with first use before the age of 20 years.”*

Swedish researcher Olle Johansson, PhD (Karolinska Institute) said: *“most worrisome to me are the constant and unavoidable EMF exposures (from cell and DECT phones, power lines, new wireless technologies like WIMAX and WI-FI, etc.) everywhere in our daily life that may affect the overall health of this and coming generations. I worry especially about the impacts on the immune system, our only real line of defense against disease.”*

Wildlife biologist Alfonso Balmoro, PhD of Valladolid, Spain voiced his concern that: *“electromagnetic radiation is a form of environmental pollution which may hurt wildlife. Phone masts located in their living areas are irradiating continuously some species that could suffer long-term effects, like reduction of their natural defenses, deterioration of their health, problems in reproduction and reduction of their useful territory through habitat deterioration. Therefore microwave and radiofrequency pollution constitutes a potential cause for the decline of animal populations and deterioration of health of plants living near phone masts.”*

Co-Editor of the BioInitiative Report Cindy Sage observed: *“Prolonged exposure to radiofrequency and microwave radiation from cell phones, cordless phones, cell towers, WI-FI and other wireless technologies has been linked to interference with short-term memory and concentration, sleep disruption, headache and dizziness, fatigue, immune disruption, skin rashes and changes in cardiac function.”*

*“these effects can happen with even very small levels of exposure if they occur on a daily basis. Cell phone use is likely to be more harmful in children whose brain and nervous system development can last into late adolescence”*

*“The public health implications of billions of people who are exposed makes this a matter of critical concern to policy-makers around the world.”*

### *The European Environment Agency Director’s Statement (2009)*

Two years following the publication of the BioInitiative Report, and just months after publication of the special issue of Pathophysiology on EMF, the EEA updated its comments on potential health



risks of EMF and concern over the adequacy of public safety limits for emerging wireless technologies. The EEA issued a Statement on Mobile Phones for the September, 2009 conference ‘Cell Phones and Health: Science and Public Policy Questions, Washington DC. In part, the comments read (9):

*“This event and the related Senate Hearings yesterday, have been, in part, stimulated by the BioInitiative Report, (2007), which helped increase public awareness of the potential hazards of electromagnetic fields, not least from mobile phones. The European Parliament responded to this debate with its resolution earlier this year which, among other things, called for lowering exposure to electromagnetic fields and for new exposure limits that would better protect the public. We fully share these recommendations.”*

The EEA provides data, information and knowledge on the environment, including its impacts on public health, to EU institutions (the European Parliament, European Commission, and European Council of Ministers), to the 32 Member Countries of the EEA, and to the general public.

*“The intention of the EEA to promote the use of mobile telephony in this way increases its responsibility to provide information that can help ensure the safety of the public when using mobile phones, especially vulnerable groups such as children, the elderly, and the immuno-compromised. This is the reason why the EEA issued an early warning about the potential hazards of EMF on 17 September 2007.”*

*“In this we drew attention to the BioInitiative report and to the other main references relevant to this debate (from the EU, the WHO, and the UK National Radiological Protection Board) which, taken together, provided the basis for our early warning on EMF.”*

*“Specifically, we noted that there are many examples of the failure to use the precautionary principle in the past, which have resulted in serious and often irreversible damage to health and environments. Appropriate, precautionary and proportionate actions taken now to avoid plausible and potentially serious threats to health from EMF are likely to be seen as prudent and wise from future perspectives”.*

*“This is the reason why the EEA issued an early warning about the potential hazards of EMF on 17 September 2007.”*

*EEA Recommendations based on current evidence (2009)*

*The evidence is now strong enough, using the precautionary principle, to justify the following steps:*

- 1. For governments, the mobile phone industry, and the public to take all reasonable measures to reduce exposures to EMF, especially to radio frequencies from mobile phones, and particularly the exposures to children and young adults who seem to be most at risk from head tumours. Such measures would include stopping the use of a mobile phone by placing it next to the brain. This can be achieved by the use of texting; hands free sets; and by the use of phones of an improved design which could generate less radiation and make it convenient to use hands free sets.*
- 2. To reconsider the scientific basis for the present EMF exposure standards which have serious limitations such as reliance on the contested thermal effects paradigm; and simplistic assumptions about the complexities of radio frequency exposures.*
- 3. To provide effective labeling and warnings about potential risks for users of mobile phones.*
- 4. To generate the funds needed to finance and organise the urgently needed research into the health effects of phones and associated masts. Such funds could include grants from industry and possibly a small levy on the purchase and or use of mobile phones. This idea of a research levy is*

*a practice that we think the US pioneered in the rubber industry with a research levy on rubber industry activities in the 1970s when lung and stomach cancer was an emerging problem for that industry. The research funds would be used by independent bodies.*

European Parliament 2009

On April 2, 2009, the European Parliament adopted the “European Parliament resolution of 2 April 2009 on health concerns associated with electromagnetic fields (2008/2211(INI))” (10). The Document was based on the “Report on health concerns associated with electromagnetic fields”, Rapporteur: Frederique Ries (11) Committee on the Environment, Public Health and Food Safety. See Appendix B for full text. It part, the resolution says:

*H. (W)hereas, however, there are some points that appear to be the subject of general agreement, in particular the idea that reactions to microwave exposure vary from one person to another, the need, as a matter of priority, to conduct exposure tests under actual conditions in order to assess the non-thermal effects associated with radio-frequency (RF) fields, and the fact that children exposed to EMFs are especially vulnerable (9),*

*1. Urges the Commission to review the scientific basis and adequacy of the EMF limits as laid down in Recommendation 1999/519/EC and report to the Parliament; calls for the review to be undertaken by the Scientific Committee on Emerging and Newly Identified Health Risks;*

*2. Calls for particular consideration of biological effects when assessing the potential health impact of electromagnetic radiation, especially given that some studies have found the most harmful effects at lowest levels; calls for active research to address potential health problems by developing solutions that negate or reduce the pulsating and amplitude modulation of the frequencies used for transmission;*

*5. Invites the Member States and local and regional authorities to create a one-stop shop for authorisation to install antennas and repeaters, and to include among their urban development plans a regional antenna plan*

*6. Urges the authorities responsible for authorising the siting of mobile telephony antennas to reach agreement, jointly with the operators in that sector, on the sharing of infrastructure, in order to reduce the volume thereof and the exposure of the public to EMFs;*

*15. Draws attention in this context to the appeal for caution from the coordinator of the Interphone study, Elisabeth Cardis, who, in the light of existing knowledge, recommends, as far as children are concerned, that mobile phones should not be used beyond reasonable limits and that landlines should be preferred;*

*21. Calls on the Commission, in recognition of the public concern in many Member States, to work with all relevant stakeholders, such as national experts, non-governmental organisations and industrial sectors, to improve the availability of, and access to, up-to-date information understandable to non-specialists on wireless technology and protection standards;*

*24. Proposes that the EU's indoor air quality policy should encompass the study of "wireless" domestic appliances, which, like Wi-Fi for Internet access and digital enhanced cordless telecommunications (DECT) telephones, have been widely adopted in recent years in public places and in the home, with the result that citizens are being continuously exposed to microwave emissions;*

29. *Instructs its President to forward this resolution to the Council, the Commission, the*

This revision essentially neutralized the chance for an independent and unbiased review of health effects and assessment of the adequacy of the ICNIRP/FCC thermally-based public health standards by designating the SCENIHR Committee to be the arbiter. The SCENIHR Committee ignored the non-thermal science and public health issues on EMF in past reviews. Appointing SCENIHR to provide the ‘official’ report to Parliament on health effects of EMF essentially guaranteed the outcome would be ineffectual for precautionary action, that the standard of evidence for judging would be “causal” evidence; and a public health standard for judging the evidence would not prevail. Reaching the very high bar of establishing ‘causal evidence of risk’ is not in line with precautionary, prudent public health decision-making. It will delay necessary actions for avoidance long past the ‘early warning’ stage when such actions may reasonably prevent substantial health harm.

However many points adopted in the resolution are in favour of public health and must not be dismissed.

#### *Seletun Statement 2009*

In November, 2009, a scientific panel met in Seletun, Norway, for three days of intensive discussion on existing scientific evidence and public health implications of the unprecedented global exposures to artificial electromagnetic fields (EMF). The Scientific Panel recognized that the body of evidence on EMF requires a new approach to protection of public health; the growth and development of the fetus, and of children; and argues for strong preventative actions. The study concluded that “new, biologically-based public exposure standards are urgently needed to protect public health worldwide” (12).

The Seletun Statement was published in 2010 in the journal *Reviews on Environmental Health*. It was titled *Scientific panel on electromagnetic field health risks: Consensus points, recommendations, and rationales*. Scientific Meeting: Seletun, Norway, November 17-21, 2009. (12).

Specific Recommendations from the Seletun Scientific Panel are:

#### *“Extremely Low Frequency (Fields from Electrical Power)*

- *Based on the available evidence, the Seletun Scientific Panel recommends a 0.1  $\mu$ T (1 mG) exposure limit for all new installations based on findings of risk for leukemia, brain tumours,*

*Alzheimer's, ALS, sperm damage and DNA strand breaks. This exposure limit does not include a safety margin;*

- *For all newly installed, or newly upgraded electrical power distribution, the Panel recommends a 0.1 uT (1 mG) set-back distance, from residences, hospitals, schools, parks, and playgrounds schools (and similar locations occupied by children) [A 0.1 uT (1 mG) time-weighted average (TWA) using peak loading for transmission lines to ensure that average is about half of this for typical exposures; or equivalent for long-term exposure in interior EMF environments (wiring, trans-formers, appliances, others).];*
- *For all newly constructed residences, offices, schools (and other facilities with children), and hospitals there shall be a 0.1 uT (1 mG) max. 24 hour average exposure limit;*
- *For all new equipment (e.g. transformers, motors, electronic products), where practical, the Panel recommends a 0.1 uT (1 mG) max. 24 hour average exposure limit. Where not practical (e.g. large power transformers), there should be a fence, or boundary marker, with clearly written warning labels that states that within the boundary area the 0.1 uT (1 mG) maximum, 24 hour average exposure limit is exceeded;*
- *The Panel recommends all countries should adopt electrical code requirements to disallow conduction of high-frequency voltage transients back into electrical wiring systems;*
- *All new electronic devices including compact fluorescent lamps (CFLs) should be constructed with filters to block high-frequency voltage transients from being conducted back onto electrical wiring systems;*
- *The Panel recommends electric field reductions from electrical wiring in buildings based on evidence of increased cancer risk from prolonged or repetitive electric field exposure. The United States National Electrical Code (NEC) and other govern-mental codes relating to building design and construction should be revised so that all new electrical wiring is enclosed in a grounded metal shield;*
- *The United States NEC and other govern-mental codes that disallow net current on electrical wiring should be better enforced, and ground fault interrupters (GFIs) should be installed on all electrical circuits in order to reduce net current.*

#### Radiofrequency/Microwave Radiation Exposure Limit Recommendations

- *Present guidelines, such as IEEE, FCC, and ICNIRP, are not adequate to protect humans from harmful effects of chronic EMF exposure. The existing scientific knowledge is, however, not sufficient at this stage to formulate final and definite science-based guidelines for all these fields and conditions, particularly for such chronic exposure as well as contributions of the different parameters of the fields, e.g. frequency, modulation, intensity, and window effects. The values suggested below are, thus, provisional and may be altered in the future.*
- *For whole-body (in vivo experiments) or cell culture-based exposure, the Seletun Scientific Panel finds sufficient evidence to establish a scientific benchmark for adverse health effect at 0.0166 W/kg based on at least 32 scientific studies reporting low-intensity effects (defined as studies reporting effects at exposures of 0.1 W/kg or lower) /8-39/.*
- *The Panel recommends a provisional whole-body limit of 0.00033 W/kg by incorporation of an additional 50-fold safety margin applied to the scientific benchmark of 0.0166 W/kg. This is consistent with both ICNIRP and IEEE/FCC safety factors. An additional 10-fold reduction is applied to take prolonged exposure into account (because 29 of the 32 studies are acute exposure only), giving a final whole-body limit of 0.000033 W/kg (33 μW/kg). No further safety margin or provision for sensitive populations is incorporated. This may need to be lowered in the future.*

- *Based on power density measurements, the Seletun Scientific Panel finds sufficient evidence for a whole-body scientific bench-mark for adverse health effect exists down to 85 mW/m<sup>2</sup> (0.0085 mW/cm<sup>2</sup> or 8.5 μW/cm<sup>2</sup>) based on at least 17 scientific studies reporting low-intensity effects on humans. Taking more recent human studies conducted near base stations, or at base-station RF levels, Kundi and Hutter /57/ report that the levels must exceed 0.5-1.0 mW/m<sup>2</sup> (0.05 to 0.1 uW/cm<sup>2</sup>) for effects to be seen; /40-57/.*
- *The Panel recommends a provisional whole-body (far-field) limit of 1.7 mW/m<sup>2</sup> (also = 0.00017 mW/cm<sup>2</sup> = 0.17 μW/cm<sup>2</sup>) by incorporation of an additional 50-fold safety margin applied to the scientific benchmark of 85 mW/m<sup>2</sup>. This is consistent with both ICNIRP and IEEE/FCC safety factors. This may need to be lowered in the future.*
- *It can be argued that a further 10-fold reduction is not justified since 13 of the 17 studies are already testing for long-term RF exposure. However, considering that the latest human population studies as reported by Kundi & Hutter (2009) do not show effects below 0.5-1.0 mW/m<sup>2</sup>, it can also then be argued that an additional 10-fold reduction on precautionary grounds is justified. If another 10-fold reduction is applied, the recommended level would then be 0.17 mW/m<sup>2</sup> (also 0.000017 mW/cm<sup>2</sup> = 0.017 μW/cm<sup>2</sup>);*
- *The Seletun Scientific Panel recommends these numeric limits to governments and health agencies for adoption in place of ICNIRP, IEEE/FCC and other outdated public safety guidelines and limits in use around the world. This approach is based on traditional public health principles that support taking actions to protect public health when sufficient evidence is present. Sufficient scientific evidence and public health concern exist today based on increased risk for cancer, adverse fertility and reproductive outcomes, immune disruption, neurological diseases, increased risk of road collisions and injury-producing events, and impairment of cognition, behaviour, performance, mood status, and disruption of sleep;*
- *Numeric limits recommended here do not yet take into account sensitive populations (EHS, immune-compromised, the fetus, developing children, the elderly, people on medications, etc). Another safety margin is, thus, likely justified further below the numeric limits for EMF exposure recommended here;*
- *The Scientific Panel acknowledges that numeric limits derived here for new biologically-based public exposure standards are still a billion times higher than natural EMF levels at which all life evolved.*

#### Specific Recommendations for mobile (cell) and cordless phone use

- *The Seletun Scientific Panel recommends that users keep mobile (cell) phones away from head and body;*
- *The Seletun Scientific Panel recommends that users keep mobile (cell) phones and PDAs\* switched off if worn or carried in a pocket or holster, or on a belt near the body. \*PDA is generic for any type of Personal Digital Assistant or hand-held computer device;*
- *The Panel strongly recommends against the use of mobile (cell) and cordless phones and PDAs by children of any age;*
- *The Panel strongly recommends against the use of mobile (cell) and cordless phones and PDAs by pregnant women;*
- *The Panel recommends that use of mobile (cell) and cordless phones and PDAs be curtailed near children or pregnant women, in keeping with preventative and precautionary strategies. The most vulnerable members of society should have access to public places without fear of harm to health;*
- *Public access to public places and public transportation should be available without undue risk of*

*EMF exposure, particularly in enclosed spaces (trains, airplanes, buses, cars, etc) where the exposure is likely to be involuntary;*

- *The Panel recommends wired internet access in schools, and strongly recommends that schools do not install wireless internet connections that create pervasive and prolonged EMF exposures for children;*
- *The Panel recommends preservation of existing land-line connections and public telephone networks;*
- *The Panel recommends against the use of cordless phones (DECT phones) and other wireless devices, toys and baby monitors, wireless internet, wireless security systems, and wireless power transmitters in SmartGrid-type connections that may produce unnecessary and potentially harmful EMF exposures;*
- *The Panel recognizes that wired internet access (cable modem, wired Ethernet connections, etc) is available as a substitute;*
- *The Panel recommends use of wired headsets, preferably with hollow-tube segments;*
- *The Panel recommends avoidance of wireless (Bluetooth-type) headsets in general;*
- *The Panel encourages the removal of speakers from headsets on wireless phones and PDAs;*
- *The Panel encourages ‘auto-off switches’ for mobiles (cells) and PDAs that automatically turn off the device when placed in a holster;*
- *The Panel strongly discourages the technology that allows one mobile (cell) phone to act as a repeater for other phones within the general area. This can increase exposures to EMF that are unknown to the person whose phone is —piggy-backed upon without their knowledge or permission;*
- *The Panel recommends the use of telephone lines (land-lines) or fiber optic cables for SmartGrid type energy conservation infra-structure. Utilities should choose options that do not create new, community-wide exposures from wireless components of SmartGrid-type projects. Future health risks from prolonged or repetitive wireless exposures of SmartGrid-type systems may be avoided by using telephone lines or fiber-optic cable. The Panel endorses energy conservation but not at the risk of exposing hundreds of millions of families in their homes to a new, involuntary source of wireless radiofrequency radiation.”*

Ten Key points had been identified:

- *“The global populations are insufficiently protected, thus currently at risk;*
- *Sensitive Populations are extra vulnerable;*
- *Government actions are urgently warranted now, based on evidence of serious disruption to biological systems;*
- *The Burden of Proof for the safety of radiation-emitting technologies should fall on Producers and Providers, not Consumers;*
- *EMF Exposures should be reduced in advance of complete understanding of mechanisms of action;*
- *The current operative measure of Radiation Risk - the specific absorption rate (SAR) - is inadequate, and misguides on safety and health risks;*
- *An international Disease Registry is needed to track Time Trends of the incidence of Illnesses to correlate the illnesses with exposures;*

- *Pre-market health testing and safety demonstration is needed for all radiation-emitting technologies;*
- *Parity is needed for occupational exposure standards, compared to those for the general public;*
- *Persons with Electrohypersensitivity need the classification Functionally Impaired.*
- *The scientists recommend specific exposure limits for different frequency fields, including microwaves, used in wireless communications, and ELF electric fields and magnetic fields.”*

*Collegium Ramazzini Publication (2010)*

The 400 page review of non-thermal EMF effects by the Ramazzini Institute, and sponsored by the International Commission for Electromagnetic Safety, and the National Institute for the Study and Control of Cancer and Environmental Diseases ‘Bernardino Ramazzini’ in 2010 provided a substantial evidence foundation for the relationship between low-intensity EMF (ELF-EMF and RFR) exposure and potential health risks (13). Taken as a whole, the two-volume report provides a compelling scientific basis on which to take precautionary, prudent public health actions. The EEA relied heavily on the Collegium Ramazzini publication to buttress their Statement on Mobile Phones, when addressing the Council of Europe the following year.

*European Environment Agency (2011)*

Dr. Jacqueline McGlade, Executive Director of the European Environment Agency provided key guidance to the Council of Europe in her *Statement on Mobile Phones and the Potential Head Cancer Risk for EMF* to the Council of Europe, Paris, February 25<sup>th</sup> 2011 (14). It read:

*“The European Parliament<sup>1</sup> has responded to this public concern with a resolution on EMF in 2009 which, among other things, called for lowering exposure to electromagnetic fields and for lower exposure limits that would better protect the public from health hazards. We share these recommendations.”*

<sup>1</sup> European Parliament resolution of 2 April 2009 on health concerns associated with electromagnetic fields (2008/2211(INI))

Further, she urged the Council of Europe take interim actions to protect public health, particularly for children, with the following:

*“The EU Commission and the EEA sees the precautionary principle as central to public policymaking where there is scientific uncertainty and high health, environmental and economic costs in acting, or not acting, when faced with conflicting evidence of potentially serious harm.”*

*“This is precisely the situation that characterises EMF at this point in its history. Waiting for high levels of proof before taking action to prevent well known risks can lead to very high health and economic costs, as we have seen with asbestos, leaded petrol and smoking.”*

*Council of Europe 2011*

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<sup>1</sup> European Parliament resolution of 2 April 2009 on health concerns associated with electromagnetic fields (2008/2211(INI))

On May 27, 2011 the Standing Committee, acting on behalf of the Parliamentary Assembly of the Council of Europe (PACE), adopted the Resolution 1815 (2011) “The potential dangers of electromagnetic fields and their effect on the environment” (15) based on the Doc. 12608, report of the Committee on the Environment, Agriculture and Local and Regional Affairs, rapporteur: Mr Huss (16). The Parliamentary Assembly of the Council of Europe come from the national parliaments of the Organization’s 47 member states and speak for the 800 million Europeans who elected them. The texts adopted by PACE – recommendations, resolutions and opinions – serve as guidelines for the Committee of Ministers, national governments, parliaments and political parties (17).

Recommendations given by the PACE Resolution 1815:

*“8. In light of the above considerations, the Assembly recommends that the member states of the Council of Europe:*

***8.1. in general terms:***

*8.1.1. take all reasonable measures to reduce exposure to electromagnetic fields, especially to radio frequencies from mobile phones, and particularly the exposure to children and young people who seem to be most at risk from head tumours;*

*8.1.2. reconsider the scientific basis for the present standards on exposure to electromagnetic fields set by the International Commission on Non-Ionising Radiation Protection, which have serious limitations, and apply ALARA principles, covering both thermal effects and the athermic or biological effects of electromagnetic emissions or radiation;*

*8.1.3. put in place information and awareness-raising campaigns on the risks of potentially harmful long-term biological effects on the environment and on human health, especially targeting children, teenagers and young people of reproductive age;*

*8.1.4. pay particular attention to “electrosensitive” people who suffer from a syndrome of intolerance to electromagnetic fields and introduce special measures to protect them, including the creation of wave-free areas not covered by the wireless network;*

*8.1.5. in order to reduce costs, save energy, and protect the environment and human health, step up research on new types of antenna, mobile phone and DECT-type device, and encourage research to develop telecommunication based on other technologies which are just as efficient but whose effects are less negative on the environment and health;*

***8.2. concerning the private use of mobile phones, DECT wireless phones, WiFi, WLAN and WIMAX for computers and other wireless devices such as baby monitors:***

*8.2.1. set preventive thresholds for levels of long-term exposure to microwaves in all indoor areas, in accordance with the precautionary principle, not exceeding 0.6 volts per metre, and in the medium term to reduce it to 0.2 volts per metre;*

*8.2.2. undertake appropriate risk-assessment procedures for all new types of device prior to licensing;*



8.2.3. *introduce clear labelling indicating the presence of microwaves or electromagnetic fields, the transmitting power or the specific absorption rate (SAR) of the device and any health risks connected with its use;*

8.2.4. *raise awareness on potential health risks of DECT wireless telephones, baby monitors and other domestic appliances which emit continuous pulse waves, if all electrical equipment is left permanently on standby, and recommend the use of wired, fixed telephones at home or, failing that, models which do not permanently emit pulse waves;*

**8.3. concerning the protection of children:**

8.3.1. *develop within different ministries (education, environment and health) targeted information campaigns aimed at teachers, parents and children to alert them to the specific risks of early, ill-considered and prolonged use of mobiles and other devices emitting microwaves;*

8.3.2. *for children in general, and particularly in schools and classrooms, give preference to wired Internet connections, and strictly regulate the use of mobile phones by schoolchildren on school premises;*

**8.4. concerning the planning of electric power lines and relay antenna base stations:**

8.4.1. *introduce town planning measures to keep high-voltage power lines and other electric installations at a safe distance from dwellings;*

8.4.2. *apply strict safety standards for the health impact of electrical systems in new dwellings;*

8.4.3. *reduce threshold values for relay antennae in accordance with the ALARA principle and install systems for comprehensive and continuous monitoring of all antennae;*

8.4.4. *determine the sites of any new GSM, UMTS, WiFi or WIMAX antennae not solely according to the operators' interests but in consultation with local and regional government authorities, local residents and associations of concerned citizens;*

**8.5. concerning risk assessment and precautions:**

8.5.1. *make risk assessment more prevention oriented;*

8.5.2. *improve risk-assessment standards and quality by creating a standard risk scale, making the indication of the risk level mandatory, commissioning several risk hypotheses to be studied and considering compatibility with real-life conditions;*

8.5.3. *pay heed to and protect "early warning" scientists;*

8.5.4. *formulate a human-rights-oriented definition of the precautionary and ALARA principles;*

8.5.5. *increase public funding of independent research, in particular through grants from industry and taxation of products that are the subject of public research studies to evaluate health risks;*

8.5.6. *create independent commissions for the allocation of public funds;*

8.5.7. *make the transparency of lobby groups mandatory;*

8.5.8. *promote pluralist and contradictory debates between all stakeholders, including civil society (Århus Convention).*”

European Environment Agency 2011

In October 12 2011, the European Environment Agency (EEA), an agency of the European Union, based in Copenhagen, Denmark, recommends again to take a precautionary approach to policy making in the EMF area (18). The Agency notes:

*“The precautionary principle.*

*Because the evidence on mobile phones and cancer presents a mixed picture, the EEA recommends using the precautionary principle (PP), as recommended in the EU Treaty, to better manage the risk. There is no clear legal definition of the PP so the EEA has produced a working definition:*

*The precautionary principle provides justification for public policy actions in situations of scientific complexity, uncertainty and ignorance, where there may be a need to avoid, or reduce, potentially serious or irreversible threats to health and the environment, using an appropriate strength of scientific evidence, and taking into account the pros and cons of action and inaction.*

*The PP requires us to weigh evidence in a different way. This is not new - societies are used to using different strengths of evidence for different reasons, based on the costs of being wrong. For example, criminals must be found guilty ‘beyond all reasonable doubt’ before they are convicted; injured people in compensation cases need only show a balance of evidence in order to win compensation for negligence; while doctors only need slight evidence of a serious illness to prescribe treatment. Such precautionary approaches are justified where it is not yet possible to establish causality beyond reasonable doubt.*

*Implications for policy makers and the mobile phone industry.*

*Citizens could be better informed about the risks of mobile phone use, as recommended by the EEA in September 2007. There is sufficient evidence of risk to advise people, especially children, not to place the handset against their heads: text messaging, or hands-free kits lead to about ten times lower radiation levels, on average, than when the phone is pressed to the head.*

*Governments may also wish to label mobile handsets as a ‘possible carcinogen’, in line with the IARC decision. In addition, more independent research is needed. The cost of these measures is very low, but the potential costs of inaction may be very high.”*

US Government Accountability Office (2012)

The US Government Accountability Office published a report in 2012 urging the US Federal Communications Commission to revisit the outdated safety standards for the exposures from wireless devices. (19)

The rapid adoption of mobile phones has occurred amidst controversy over whether the technology poses a risk to human health as a result of long-term exposure to RF energy from mobile phone use.

FCC and FDA share regulatory responsibilities for mobile phones. GAO was asked to examine several issues related to mobile phone health effects and regulation. Specifically, this report addresses:

1. *(1) what is known about the health effects of RF energy from mobile phones and what are current research activities,*
2. *(2) how FCC set the RF energy exposure limit for mobile phones, and*
3. *(3) federal agency and industry actions to inform the public about health issues related to mobile phones, among other things.*
4. *GAO reviewed scientific research; interviewed experts in fields such as public health and engineering, officials from federal agencies, and representatives of academic institutions, consumer groups, and the mobile phone industry; reviewed mobile phone testing and certification regulations and guidance; and reviewed relevant federal agency websites and mobile phone user manuals.*

The Report noted that the FCC's RF energy exposure limit may not reflect the latest research. Redundant and overlapping jurisdiction over the setting of public safety limits is highlighted where the GAO Report notes:

*"FCC told GAO that it relies on the guidance of federal health and safety agencies when determining the RF energy exposure limit, and to date, none of these agencies have advised FCC to change the limit. However, FCC has not formally asked these agencies for a reassessment. By not formally reassessing its current limit, FCC cannot ensure it is using a limit that reflects the latest research on RF energy exposure. FCC has also not reassessed its testing requirements to ensure that they identify the maximum RF energy exposure a user could experience. Some consumers may use mobile phones against the body, which FCC does not currently test, and could result in RF energy exposure higher than the FCC limit." (US GAO, 2012)*

The GAO Report recommends to the FCC that it formally reassess, and, if appropriate, change its current RF energy exposure limit and mobile phone testing requirements related to likely usage configurations, particularly when phones are held against the body. FCC noted that a draft document that is now under consideration by the FCC has the potential to address GAO's recommendations. (US GAO, 2012)

*European Environment Agency: Late Lessons II - Mobile Phone Chapter (2012)*

The European Environment Agency (EEA) has Late Lessons from Early Warnings: Science, Precaution, Innovation (20). It includes a new chapter on Mobile Phone Use and Brain Tumor Risk (Hardell et al., 2012 (21). It addresses the early 'lessons' learned about carcinogenicity of EMF hazards from power lines and visual display units or VDUs. ELF-EMF was classified in 2001 by IARC as a 2B Possible Human Carcinogen. It provides a chronology of the publication of studies,

including the Final Interphone Report, the combined Hardell et al. papers (1999-2011) on brain tumor risks, and finally the classification in 2011 by IARC of radiofrequency radiation also to be a Group 2B Possible Human Carcinogen. The paper includes a section on risks to children. It shows that for children who start using a mobile phone in their early teenage years, by the time these children are in the 20-29 age group, they have a 500%+ increased risk of glioma and a 600%+ increased risk of acoustic neuroma when they are young adults. The risks for adults (ipsilateral, 10+ years of mobile phone use are roughly 200% or doubled.

### III. EXPERT RESEARCH GROUP AND PHYSICIANS' ADVISORIES (2007 – 2012)

#### *American Academy of Environmental Medicine Statement*

In a landmark statement adopted early 2012, the American Academy of Medicine (AAEM) signaled its opposition to the California Public Utilities Commission proposal to install wireless utility meters in California that create new sources of elevated radiofrequency radiation wherever buildings have electrical meters (22 and Appendix C). The letter stated:

*“The American Academy of Environmental Medicine opposes the installation of wireless ‘smart meters’ in homes and schools based on a scientific assessment of the current medical literature (references available on request). Chronic exposure to wireless radiofrequency radiation is a preventable environmental hazard that is sufficiently well-documented to warrant immediate preventative public health action.”*

The American Academy of Environmental Medicine was founded in 1965, and is an international association of physicians and other professionals interested in the clinical aspects of humans and their environment. The Academy is interested in expanding the knowledge of interactions between human individuals and their environment, as these may be demonstrated to be reflected in their total health. The AAEM provides research and education in the recognition, treatment and prevention of illnesses induced by exposures to biological and chemical agents encountered in air, food and water. This represents the first national physician's group to look in-depth at wireless health risks; and to advise the public and decision-makers about preventative public health actions that are necessary. The AAEM based its opinion in part on the established scientific evidence, and on the recent classification by the WHO International Agency for Research on Cancer (IARC) that radiofrequency radiation, like ELF-EMF is a Group 2B Possible Human Carcinogen. The rationale for widespread public exposure to a new source of radiofrequency radiation in every home and classroom, after being designated a Possible Human Carcinogen, is clearly unacceptable from a medical and public health standpoint. The full text of the letter is Appendix A.

### International Doctors' Appeal (2012)

In 2002 more than 1000 physicians signed the “Freiburg Appeal” (23). It was translated into many languages. As many as 36,000 people from all over the world support its warning about the dangers of wireless communication. Ten years later, in October 2012 the ‘International Doctors’ Appeal 2012’ was published (24).

*“As physicians and scientists, we hereby call on our colleagues and the wider global community to support us with their signature in our fight for the protection of life. However, we also appeal to the politicians to ensure that the people are protected by the following precautionary measures, which also include fundamental human rights:*

- *Protect the inviolability of the home by minimizing radio-frequency exposure levels, which penetrate through the walls of one's own home.*
- *Considerably lower radio-frequency radiation exposures as well as exposure limits to a level that reliably protects humans and nature from adverse biological effects of electromagnetic fields.*
- *Convert devices/transmitters that transmit continuously (e.g. cordless phones, wireless Internet access (Wi-Fi), and wireless meters) to technologies that only emit radio-frequency radiation on demand when being used.*
- *Children and adolescents need special protection: Children below the age of 8 should not use cell phones and cordless phones; children and adolescents between the ages 8 and 16 should not use cell phones or only use them in the case of an emergency.*
- *Attach clearly visible warning labels and safety guidelines for lowering the radiation exposure on cell phones and other wireless devices, including instruction manuals. An important reminder: Try not to carry a cell phone right next to your body when it is turned on.*
- *Identify and clearly mark protected zones for electrohypersensitive people; establish public areas without wireless access or coverage, especially on public transport, similar to smoke-free areas for nonsmokers.*
- *Promote the development of communication technologies and electricity use that is more compatible with health. Prefer wired solutions for home use and public facilities. Expand fiberoptic networks as the foundation of a modern, sustainable, and performance-based technology that meets the ever-increasing demand for higher data transmission rates.*
- *Provide government funding for industry-independent research and education that do not dismiss strong scientific and medical findings of potential risks, but rather work to clarify those risks.*

*We also call on you as an individual: Prefer wired communication technologies. Inform yourself and pass this information on to your family, neighbors, friends, and politicians. You can make a difference by sharing information and making precautionary choices so that the protection of human health and the environment is not left to and limited by commercial interests.”*

### American Academy of Pediatrics (July 2012)

The American Academy of Pediatrics (AAP), a non-profit professional organization of 60,000 primary care pediatricians, pediatric medical subspecialists, and pediatric surgical specialists in the

United States dedicated to the health, safety and well-being of infants, children, adolescents, and young adults strongly supports the proposal for a formal inquiry into radiation standards for cell phones and other wireless products. The Academy encourages the Federal Communications Commission (FCC) to vote to move forward with its proposed inquiry into the adequacy of the existing FCC public safety limits (25 and Appendix D).

*"The FCC has not assessed the standard for cell phone radiation since 1996. According to industry groups, approximately 44 million people had mobile phones when the standard was set; today, there are more than 300 million mobile phones in use in the United States. While the prevalence of wireless phones and other devices has sky-rocketed, the behaviors around cell phone uses have changed as well. The number of mobile phone calls per day, the length of each cell phone call, and the amount of time people use mobile phones has increased, while cell phone and wireless technology has undergone substantial changes. Many more people, especially adolescents and young adults, now use cell phones as their only phone line and they begin using wireless phones at much younger ages."*

*"The AAP believes the inquiry to reassess the radiation standard presents an opportunity to review its impacts on children's health and well-being. In the past, such standards have generally been based on the impact of exposure on an adult male. Children, however, are not little adults and are disproportionately impacted by all environmental exposures, including cell phone radiation. In fact, according to IARC, when used by children, the average RF energy deposition is two times higher in the brain and 10 times higher in the bone marrow of the skull, compared with mobile phone use by adults. While the Academy appreciates that the FCC is considering investigating whether the emission standards should be different for devices primarily used by children, it is essential that any new standard for cell phones or other wireless devices be based on protecting the youngest and most vulnerable populations to ensure they are safeguarded throughout their lifetimes."*

*"Finally, in reviewing the SAR standard, the FCC has the opportunity to highlight the importance of limiting media use among children. The Academy has found potentially negative effects and no known positive effects of media use by children under the age of two, including television, computers, cell phones, and other handheld wireless devices. In addition, studies consistently show that older children and adolescents utilize media at incredibly high rates, which potentially contributes to obesity and other health and developmental risks. In reviewing the SAR limit, the FCC has the opportunity to improve the health of our nation by highlighting the importance of limiting screen time and media use for children and adolescents."*

#### IV. LOCAL AND NATIONAL COUNTRY ACTIONS (2007 – 2012)

##### City of Brussels

The order of 1 March 2007 on the protection of the environment against the potentially harmful effects and nuisances caused by non-ionizing radiation, established a new regional framework legislation. Installations emitting electromagnetic radiation in the Brussels-Capital Region need environmental permits to be issued by Brussels Environment (26). The ordinance defines a standard of 3 V/m (also  $\sim 24 \text{ mW/m}^2 \sim 2.4 \text{ } \mu\text{W/cm}^2$ ) is not exceeded by the transmitting mobile phone antennas. Compliance with this standard is applied since 14 March 2009.

*“Environmental permit for antennas: The steps of the procedure (27)*

*1. Introduction of the permit application*

*The application of the environment permit is introduced by the operator of the antenna to Brussels Environment includes a technical dossier containing plans from a simulation of the electromagnetic field in a radius of influence of 200 meters from the transmitting antenna.*

*This simulation takes into account the technical characteristics of the antenna and the surrounding environment (presence of buildings ...). It aims to ensure that 25% of the 3 V/m standard (also ~ 24 mW/m<sup>2</sup> ~ 2.4 μW/cm<sup>2</sup>) [given as power density = 1.5 V ~ 6 mW/m<sup>2</sup> ~ 0.6 μW/cm<sup>2</sup>/m] is not exceeded in any place accessible to the public.*

*2. Site visit and review of the record*

*A Brussels Environment agent reviews the application and conducts a site visit to see if the simulation is correct and if the environmental situation close to the antenna described in the application file corresponds reality given. If this is the case, the file is submitted to public inquiry.*

*3. Public Inquiry*

*The application is submitted to a 15 days public inquiry to notify you and allow you to give your opinion. Public inquiry was announced by red posters usual affixed near the place of the antenna location. Any citizen can go to municipal services concerned to take note of the case.*

*4. Decision*

*The environmental permit is granted or refused by Brussels Environment. This license ensures that all measures for safety and protection of the environment and residents are provided.”*

*Principality of Liechtenstein*

In 2008 in the Principality of Liechtenstein a new environmental law came into effect including regulations and legal limits for cellular transmitters (28). The complete text for article 31 and 34 is given below. Article 31 defines locations with sensitive use where site specific limits have to be applied. However article 34, paragraph 4 (0.6 V/m limit) had been repealed in 2009 after business associations had initiated a national referendum (29).

***Article 31 - Places of Sensitive Use***

*Regarded as places of sensitive use:*

- a) rooms in buildings where people stay regularly over a long period;*
- b) playgrounds and rest places of schools, kindergartens and nursery schools operated by the public;*
- c) fixed outdoor workplaces where work-related to the same person is shown during more than 800 hours a year. Including, in particular fixed sales stands and Jobs at permanently installed equipment, but not outside areas of restaurants and construction sites;*
- d) those areas of undeveloped land in construction zones on which uses are permitted by letters a and b.*

***Article 34 transmitters for cellular and wireless local loops***

*Site specific limits*

- 1) For transmitters of mobile cellular networks and transmitters for wireless local loops with a total effective radiated power of at least 6 watts, the site specific limits under paragraph 2 and 4 apply. They do not apply for radio relay systems, the wireless network security "Polycom" and other radio networks of security and rescue organizations.*
- 2) The site specific limit for the effective value (rms) of the electric field strength is:  
a) for installations transmitting exclusively in the frequency range of 900 MHz: 4.0 V/m (also =*

- $42 \text{ mW/m}^2 = 4.2 \text{ } \mu\text{W/cm}^2$ );
- b) for facilities that broadcast exclusively in the frequency range of 1800 MHz or in a higher frequency range: 6.0 V/m (also  $\sim 100 \text{ mW/m}^2 = 10 \text{ } \mu\text{W/cm}^2$ );
- c) for facilities that broadcast in both frequency ranges specified in letters a and b: 5.0 V/m (also  $= 66 \text{ mW/m}^2 = 6.6 \text{ } \mu\text{W/cm}^2$ ).
- 3) Whereas the operative mode and the maximum call and data traffic is at maximum transmission power.
  - 4) Holder of a broadcast system are required to reduce the actual electric field strength to the lowest technically feasible value, using appropriate measures and to accomplish by the end of 2012 an actual electric field strength of 0.6 V/m (also  $\sim 1 \text{ mW/m}^2 \sim 0,1 \text{ } \mu\text{W/cm}^2$ ) on average.
  - 5) The Government shall provide further details by ordinance.

Italy – Autonomous Province of Bolzano - South Tyrol (2009)

In a Decree dated April 29, 2009, the governor of the Autonomous Province Bolzano issued Regulation No. 24 concerning telecommunications infrastructure. In the autonomous province of Bolzano radio- and cellular transmitter sites have to be operated that take health aspects into account (30, 31). In practice e.g. radio transmitters had been aggregated on tall mast sites preferably outside residential areas on mountains. The population exposure from cellular antenna sites is calculated with help of predictive software and the best possible sites are evaluated. Each site has to be approved by a communications commission. The national limit for the sum of all RF sources in Italy is 6 V/m (also  $\sim 100 \text{ mW/m}^2 \sim 10 \text{ } \mu\text{W/cm}^2$ ). In the autonomous province of Bolzano the competent authority - State Agency for Environment - negotiates each cellular site with the relevant operator(s) in order to achieve a site specific exposure of 3 V/m (also  $\sim 24 \text{ mW/m}^2 \sim 2.4 \text{ } \mu\text{W/cm}^2$ ) and lower (32).

Austria – Ministry of Health 2010

In December 2010 the document “Aspects of the current health assessment of mobile communications - Recommendation of the Supreme Health Council” was published (33). Some of the recommendations are listed below.

*“... Radio equipment, which leads to a prolonged exposure of people should be set up using a precautionary target value, since long-term effects can not be excluded with sufficient certainty. This target value should be set for high-frequency effects at least a factor of 100 below the limit for the power density of the ÖNORM E 8850 (note by the author: similar to ICNIRP 1998). In addition, legal measures should be taken, that*

- a) in case that various electromagnetic fields acting simultaneously, all relevant frequencies of different emitters are not to exceed the limits and*
- b) operators are encouraged to minimize exposure from electromagnetic fields well below the limit values during planning and operation.”*

*„ ... In view of the many pending issues, the rational use of mobile phones should be taken generally, which seeks to have meaningful use and avoid unnecessary exposure. This is especially true for children and adolescents, since they will be predictable more exposed over their lifetime and*



*the organ-specific exposure through anatomical and developmental differences in certain tissues may be higher than in adults.”*

Nine specific recommendations were given by the Austrian Supreme Health Council:

1. *“If possible, do not call, when the reception is poor.*
2. *Keep calls short.*
3. *In situations where you can choose between mobile and fixed-line, use the landline.*
4. *Make calls in the car as little as possible.*
5. *With GSM (2 G) phones, wait a little time while connecting, before you run the phone to your head. Exposure by UMTS (3 G) mobile phones is usually much lower. Make sure to set the connection in multi-band-mobiles preferably via UMTS (3 G)*
6. *Use headsets or speakerphones.*
7. *When buying a cell phone mind low SAR values.*
8. *Wear the mobile not directly on the body.*
9. *Send an SMS instead of calling.”*

#### France (2010)

In 2010 in France the Environmental Law some regulations concerning EMF issues had been supplemented (34, 35). Some excerpts are given below:

##### **Article 183**

- *Wireless terminals that are intended to be connected with a public telephone network may not be placed on the market without additional equipment, which allows to limit the exposure of the head during communication.*
- *The Higher Audiovisual Council shall ensure that the development of the sector of audiovisual communication goes along with an increased level of protection of the environment and the health of the population.*
- *Any advertising, about what aid whatsoever, with the direct aim to promote the sale, the provision or the use of a mobile phone by children under 14 is prohibited.*
- *The payment or free circulation of goods which contain a radio equipment and their use is specifically designed for children under six may be banned by decree of the Minister of Health, in order to avoid excessive exposure of children.*
- *Individuals who are responsible for the transport of electrical energy have to carry out a regular control of the electromagnetic fields, which are induced by power lines. The result of these measurements is to report annually to the French Agency for Sanitary Safety of environment and labor, which will publish them.*
- *In kindergarten (pre-), in the primary schools and in secondary schools (secondary) the use of a mobile phone is prohibited by a student during the entire lesson and at the designated places given in the house rules.*

##### **Article 184**

*For any mobile telephone that is offered for sale [in France], the specific absorption rate is legible and in French. It must also provide a recommendation for the use of additional equipment, by means*

*of which the radio exposure of the head can be limited during the communication, as in the fifth Paragraph of point I of Article 183 of this law provided.*

*Austria – Austrian Medical Association (2012)*

In 2012 the Austrian Medical Association published the “Guideline of the Austrian Medical Association for the diagnosis and treatment of EMF-related health problems and illnesses (EMF syndrome)”(36). The guideline is recommended to doctors of all disciplines in Austria. The guideline says in part:

*“There has been a sharp rise in unspecific, often stress-associated health problems that increasingly present physicians with the challenge of complex differential diagnosis. A cause that has been accorded little attention so far is increasing electrosmog exposure at home, at work and during leisure activities, occurring in addition to chronic stress in personal and working life. It correlates with an overall situation of chronic stress that can lead to burnout.*

*How can physicians respond to this development?*

*The Austrian Medical Association has developed a guideline for differential diagnosis and potential treatment of unspecific stress-related health problems associated with electrosmog. Its core element is a patient questionnaire consisting of a general assessment of stress symptoms and a specific assessment of electrosmog exposure. The guideline is intended as an aid in diagnosing and treating EMF-related health problems.”*

*Key elements of the guideline are:*

- 1. History of health problems and EMF exposure*
- 2. Examination and findings*
- 3. Measurement of EMF exposure*
- 4. Prevention or reduction of EMF exposure*
- 5. Diagnosis*
- 6. Treatment*

*Russian National Committee on Non-Ionizing Radiation (2011 and 2012)*

On March 3, 2011 the Russian National Committee on Non-Ionizing Radiation Protection approved the “Resolution: Electromagnetic Fields from Mobile Phones: Health Effects on Children and Teenagers” (37 and Appendix E). Parts of the resolution are given below.

*“The Resolution evolved from scientific statements adopted by RNCNIRP in 2001, 2004, 2007, 2008 and 2009, taking into account contemporary views and actual scientific data. The Resolution represents a viewpoint of the professional scientific community and is meant for public dissemination, for the consumers of the mobile telecommunications services, as well as for the legislative and executive authorities who develop and implement health protection, environmental, communication, scientific and safety policies.”*

In 2012, the RCNIRP issued an update to this Resolution, calling on all countries to halt the use of wireless technologies in the school classrooms, and to move quickly to replace wireless with wired internet and teaching technologies (38 and Appendix F).

## V. INTERNATIONAL HEALTH AGENCY ACTION

### WHO International Agency for Research On Cancer – Formal Classification (2011)

On May 31, 2011 the WHO/International Agency for Research on Cancer (IARC) classified radiofrequency electromagnetic fields as possibly carcinogenic to humans (Group 2B), based on an increased risk for glioma, a malignant type of brain cancer, associated with wireless phone use (39, 40).

A group of 30 researchers, scientists and medical doctors were invited to participate in an assessment of the scientific literature on radiofrequency radiation carcinogenicity in Lyon, France. Under the auspices of IARC, this IARC Monograph Working Group on RFR conducted a comprehensive scientific assessment of RF studies and determined:

*"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). This evaluation was supported by a large majority of Working Group members."*

*"The Working Group concluded that the (Interphone Final Report) findings could not be dismissed as reflecting bias alone, and that a causal interpretation between mobile phone RF-EMF exposure and glioma is possible. A similar conclusion was drawn from these two studies for acoustic neuroma, although the case numbers were substantially smaller than for glioma."*

It is important to recognize that the IARC RF Working Group did not find the evidence insufficient to classify (Group 3) or not a carcinogen (Group 4). Both of these possible outcomes to the scientific assessment could have rendered a substantially weaker conclusion. Where there has been the necessity of a virtual scientific paradigm shift to accommodate ANY consideration of both ELF-EMF and RFR to the status where legitimate scientific attention is achieved is a notable achievement. There is a very high bar set to show that non-chemical carcinogens warrant IARC carcinogenicity evaluation - it greatly exceeds that necessary for chemicals and other toxins.

The WHO press release No° 208 states

*"The IARC Monograph Working Group discussed the possibility that these exposures might induce long-term health effects, in particular an increased risk for cancer. This has relevance for public health, particularly for users of mobile phones, as the number of users is large and growing,*

*particularly among young adults and children.”*

The corresponding monograph has not been published as of October 2012. On request, IARC clarified the frequency range covered by the monograph (41).

*“The IARC Monographs classification of Radiofrequency Electromagnetic Fields (RF-EMF) covers the entire radiofrequency segment of the electromagnetic spectrum (30 kHz-300 GHz). Within this spectrum, the electromagnetic fields around (or the radiation emitted by) mobile telephones represent the most intense and most wide-spread exposure situation, for which a small increase in risk for glioma and acoustic neuroma has been found in the group of 'heavy users'. Other devices that emit the same type of RF radiation - base-station antennas, radio/tv antennas, WiFi stations, smart meters - fall under the same evaluation. However, because the exposure levels for many of these other devices and exposure situations are so much lower than the exposure to someone who has a functioning cell phone against her/his ear, the risk will be considerably less (although the hazard still exists).”*

## VI. CONCLUSIONS

1) The European Environmental Agency (2007) concludes that: “(T)here are many examples of the failure to use the precautionary principle in the past, which have resulted in serious and often irreversible damage to health and environments. Appropriate, precautionary and proportionate actions taken now to avoid plausible and potentially serious threats to health from EMF are likely to be seen as prudent and wise from future perspectives. We must remember that precaution is one of the principles of EU environmental policy.”

2) The European Parliament, the Council of Europe and various governmental agencies in Europe, Scandinavia, Israel, North America, India and Asia have called for better warnings, to reduce or eliminate exposures from wireless devices, to label devices with health warnings, to develop new, lower public safety standards, to protect sensitive subgroups (children, people who are sensitized to EMF and wireless radiation already (electrosensitivity), and to inform and protect pregnant women and their young from unnecessary exposures. The countries of France, Italy, Belgium, the Principality of Liechtenstein, Switzerland, Austria, the United Kingdom, and others have led in proposing new restrictions on wireless exposures, based on scientific and public health reviews of the evidence. The US Government Accountability Office has called for review of American (FCC) safety limits for wireless devices.

3) Physicians and health advisory groups around the world have called for prudent public health actions that include reducing or eliminating ELF and RFR exposures, especially for pregnant women and for the developing fetus, and children, and particularly where other options are available (in the case of wireless exposures in particular). Some of these groups include the Austrian Ministry of Health, the Russian National Committee on Non-Ionizing Radiation, the American Academy of Environmental Medicine, the American Academy of Pediatrics, the British Chief Medical Officer, and many more governmental agencies across Europe, Scandinavia, North America, India and Asia.

4) Physicians and researchers who have published in-depth reviews on the science and public health policy implications of ELF and RFR risks to health include Pathophysiology, Vol 16 (2,3); 2009; the two-volume *Non Thermal effects and Mechanisms of interaction between Electromagnetic Fields and Living Matter*. eds Giuliani L and Soffritti, M, ICEMS, Ramazzini Institute, Bologna, Italy., 2010; the World Health Organization INTERPHONE Final Report, 2010; and the WHO International Agency for Research on Cancer RFR Monograph (Baan et al, 2011) designating RFR

as a Group 2B Possible Human Carcinogen.

5) Overall, these provide support for warnings and advice to consumers and the public that the body of evidence for bioeffects from daily exposure levels of ELF and RFR can reasonably be presumed to result in adverse health impacts with chronic exposure. The studies on which these warnings rely establish that bioeffects from exposure to ELF and RFR are established, not speculative or weak. Further, they establish that existing ICNIRP and FCC public safety limits are inadequate to protect public health; and underscore the need for new, biologically-based public exposure standards.

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## VIII. APPENDICES

### APPENDIX A Full Text of European Parliament Statement - 2008

*“The European Parliament ,*

*– having regard to the Communication from the Commission to the Council, the European Parliament and the European Economic and Social Committee on the mid-term review of the European Environment and Health Action Plan 2004-2010 (COM(2007)0314),*

*– having regard to its resolution of 23 February 2005 on the European Environment and Health Action Plan 2004-2010(1),*

*– having regard to the World Health Organisation (WHO) report of 27 July 2007 entitled 'Principles for evaluating health risks in children associated with exposure to chemicals',*

*– having regard to Articles 152 and 174 of the EC Treaty targeting a high level of protection for human health and the environment,*

*– having regard to Decision No 1350/2007/EC of the European Parliament and of the Council of 23 October 2007 establishing a second programme of Community action in the field of health (2008-13)(2),*

*– having regard to Rule 45 of its Rules of Procedure,*

*– having regard to the report of the Committee on the Environment, Public Health and Food Safety (A6-0260/2008),*

*A. noting with interest the fact that, since 2003, the EU has based its health-protection policy on closer cooperation between the health, environment and research sectors, so that it may be hoped that a coherent and integrated European environmental health strategy will eventually be introduced,*

*B. whereas the courses of action currently being followed by the EU as part of its first environment and health action plan (2004-2010) (COM(2004)0416) - namely, the preparation of indicators, the development of integrated monitoring, the collection and evaluation of relevant data as well as an increase in the volume of research - will allow greater insight into the interactions between sources of pollution and health effects but are known to be inadequate as a means of reducing the growing number of diseases related to environmental factors,*

*C. whereas it is virtually impossible to establish a mid-term assessment of the aforementioned action plan, since the latter pursues no clear, quantified objective and the total budget allocated to it is difficult to determine and definitely insufficient for its efficient promotion,*

*D. whereas the main objective of the 2008-2013 health programme is to act upon the factors which traditionally determine health (diet, smoking, alcohol consumption and the use of drugs); whereas this 2004-2010 action plan should focus on certain new health challenges and in addition address the determining environmental factors which affect human health, such as indoor and outdoor air quality, electromagnetic waves, nanoparticles and chemicals which are a cause for serious concern (substances classed as carcinogenic, mutagenic or toxic to reproduction [CMR], endocrine disruptors), as well as risks to health arising from climate change,*

*E. whereas respiratory illnesses rank second as a cause of death and in terms of incidence, prevalence and cost within the EU, whereas they constitute the main cause of death amongst children under the age of five*

*and whereas such diseases are continuing to progress on account of - in particular - indoor and outdoor air pollution,*

*F. whereas atmospheric pollution caused, in particular, by fine particles and ground-level ozone, is a significant threat to human health which is affecting the proper development of children and reducing life expectancy in the EU(3),*

*G. whereas, with reference to the issue of urban environmental health, particularly the quality of indoor air, the Community - in accordance with the subsidiarity and proportionality principles - should do more to combat domestic pollution, since Europeans spend on average 90% of their time inside buildings,*

*H. whereas at the 2004 and 2007 WHO ministerial conferences on health and the environment, attention was drawn to the links between the complex combined influence of chemical pollutants and a number of chronic illnesses and disorders (affecting children in particular); whereas those concerns are also expressed in official documents issued in connection with the United Nations Environment Programme (UNEP) and by the Intergovernmental Forum on Chemical Safety (IFCS),*

*I. whereas there is increasing scientific evidence that certain cancers, such as cancer of the bladder, bone cancer, lung cancer, skin cancer, breast cancer and others are caused not only by the effects of chemical substances, radiation and airborne particles but also by other environmental factors,*

*J. whereas these problematic developments in environmental health have been accompanied in recent years by the emergence of new diseases or syndromes, such as multiple chemical hypersensitivity, dental-amalgam syndrome, hypersensitivity to electromagnetic radiation, sick-building syndrome and attention-deficit and hyperactivity syndrome in children,*

*K. whereas the precautionary principle has been enshrined in the Treaty since 1992 and whereas the European Court of Justice has repeatedly specified the substance and the scope of that principle in Community law, which constitutes one of the cornerstones of the protection policy pursued by the Community in the field of health and the environment(4),*

*L. having regard to the highly restrictive - if not to say impracticable - nature of the criteria adopted by the Commission in its 2 February 2000 Communication on the precautionary principle (COM(2000)0001),*

*M. having regard to the importance of human biological monitoring as a tool for assessing the European population's degree of exposure to the effects of pollution and the determination (repeatedly expressed by Parliament in Paragraph 3 of its aforementioned resolution of 23 February 2005 and in the conclusions issued at the end of the 20 December 2007 Council meeting of Environment Ministers) to expedite the introduction of a biological-monitoring programme at EU level,*

*N. whereas it is readily acknowledged that climate change can play an important role in increasing the severity and incidence of certain diseases and in particular that heat-wave frequency, flooding and wildfires as the most frequent natural disasters in the EU can lead to additional diseases, poor sanitation and deaths, while at the same time recognising the beneficial effects on health of measures to alleviate climate change,*

*O. whereas climate change will have significant effects on human health, inter alia by encouraging the development of certain infectious and parasitic diseases mainly because of changes in temperature and humidity and their impact on ecosystems, animals, plants, insects, parasites, protozoa, microbes and viruses,*

*P. whereas Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy(5) and its daughter directives contain clear provisions concerning the preservation and restoration of healthy waters,*

*Q. whereas environmental medicine is a new medical discipline based on university teaching which is still too fragmentary and unevenly distributed amongst the Member States and which thus deserves to be supported and promoted within the EU,*

*R. whereas the number of persons suffering as a result of environmental factors is increasing and epidemiologies should be developed in order to obtain a full picture of diseases which are caused wholly or in part by environmental factors,*

*1. Acknowledges the efforts made by the Commission since the action plan was launched in 2004, particularly in terms of improving the chain of information concerning health and the environment, integrating and expanding European research in this area and cooperating with specialist international organisations such as the WHO;*

*2. Considers, however, that such an action plan is bound to fail at least in part, since it is designed solely to accompany existing Community policies, it is not based upon a preventive policy intended to reduce illnesses linked to environmental factors, and it pursues no clear, quantified objective;*

*3. Draws the Commission's attention to the fact that a programme has already been carried out under the aegis of the WHO as part of which the WHO Member States established their own national and local environmental health action plans comprising specific objectives and implementation plans; recommends to the Commission therefore that it review this WHO programme as a possible model which could also serve as a useful example to the Union in the future;*

*4. Deeply regrets the fact that the Commission (and in particular its Research DG) has not provided sufficient funding for human biological monitoring in 2008 to enable it (as it had promised Parliament and the Member States) to introduce a consistent approach to biological monitoring within the EU;*

*5. Calls upon the Commission to respond by 2010 to two essential objectives which the Commission set itself in 2004 and to establish and carry out a practicable communication strategy for these objectives, namely to make members of the general public aware of environmental pollution and the impact thereof on their health, and to reconsider and adapt European risk-reduction policy;*

*6. Strongly recommends that the Commission and Member States meet their obligations as regards implementation of Community legislation;*

*7. Stresses that, when it comes to assessing the impact of environmental factors on health, consideration should be given first and foremost to vulnerable groups such as pregnant women, newborn babies, children and the elderly;*

*8. Calls for special attention to be given to vulnerable groups, who are the most susceptible to pollutants, by introducing measures to reduce exposure to indoor environmental contaminants in healthcare facilities and schools through the adoption of sound indoor air quality management practices;*

*9. Urges the Commission, when drafting proposals for the revision of existing laws, not to weaken those laws under pressure from lobbies or regional or international organisations;*

*10. Points that the EU needs to apply a continuous dynamic and flexible approach to the Action Plan; considers that it is therefore of paramount importance to acquire specific expertise on the subject of environmental health, to be based on transparency and on a multidisciplinary and adversarial approach which would thus enable the general public's distrust of official agencies and committees of experts to be countered; points to the importance of improving the training of health experts by means, in particular, of exchanges of best practice at Community level;*

11. Points out that in recent years there have been genuine advances in environmental policy in the form of (for example) a reduction in air pollution, an improvement in water quality, the collection and recycling of waste, the monitoring of chemicals and a ban on leaded petrol, but notes at the same time that EU policy still lacks a comprehensive preventive strategy and fails to apply the precautionary principle;

12. Calls, therefore, on the Commission to revise the criteria laid down in its aforementioned Communication as regards recourse to the precautionary principle pursuant to European Court of Justice case-law, in order to ensure that an action and security principle based on the adoption of provisional and proportionate measures lies at the heart of Community health and environment policies;

13. Considers that shifting the burden of proof onto producers or importers and requiring them to demonstrate that a product is harmless would make it possible for a policy based on prevention to be promoted (as provided for in European Parliament and Council Regulation (EC) No 1907/2006 of 18 December 2006 concerning the registration, evaluation, authorisation and restriction of chemicals (REACH) and establishing a European Chemicals Agency(6) ), and encourages the Commission to extend that obligation to Community legislation concerning all products; considers that any increase in animal testing under the Action Plan should be avoided and full regard should be paid to the development and use of alternative methods;

14. Calls once again upon the Commission to come forward as soon as possible with concrete measures on indoor air quality which would ensure a high level of protection of health and safety indoors to be established, in particular when revising Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products(7) , and to propose measures to increase the energy efficiency of buildings and the safety and the harmlessness of chemical compounds used in equipment and furnishings;

15. Recommends that, in order to reduce damaging effects of the environment on health, the Commission should call upon Member States, by means of tax concessions and/or other economic incentives, to interest market operators in improving the quality of indoor air and reducing exposure to electromagnetic radiation in their buildings, branch establishments and offices;

16. Recommends that the Commission draft appropriate minimum requirements to guarantee the quality of indoor air in buildings to be newly built;

17. Recommends that, in awarding individual European Union support, the Commission bear in mind its impact on the quality of indoor air, exposure to electromagnetic radiation and the health of particularly endangered sections of the population in the projects concerned in a similar way to that in which attention is devoted to environmental protection criteria;

18. Calls for environmental quality standards for priority substances in water to be laid down in accordance with the latest scientific knowledge and regularly brought into line with current scientific thinking;

19. Points out that certain Member States have successfully introduced mobile analysis laboratories (or "green ambulances") to enable habitat pollution in public and private places to be diagnosed swiftly and reliably; considers that the Commission could promote such a practice within the Member States which have not yet acquired such a means of direct intervention at a polluted site;

20. Is concerned about the lack of specific legal provisions to ensure the safety of consumer products containing nanoparticles and the relaxed attitude of the Commission with regard to the need to review the regulatory framework for the use of nanoparticles in consumer products in light of the increasing number of consumer products containing nanoparticles being put on the market;

21. Is greatly concerned at the Bio-Initiative international report(8) concerning electromagnetic fields, which summarises over 1500 studies on that topic and which points in its conclusions to the health risks posed by emissions from mobile-telephony devices such as mobile telephones, UMTS, Wifi, Wimax and Bluetooth, and also DECT landline telephones;

22. Notes that the limits on exposure to electromagnetic fields which have been set for the general public are obsolete, since they have not been adjusted in the wake of Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0Hz to 30 GHz)(9), obviously take no account of developments in information and communication technologies, of the recommendations issued by the European Environment Agency or of the stricter emission standards adopted, for example, by Belgium, Italy and Austria, and do not address the issue of vulnerable groups, such as pregnant women, newborn babies and children;

23. Calls, consequently, upon the Council to amend its Recommendation 1999/519/EC in order to take into account the Member States' best practices and thus to set stricter exposure limits for all equipment which emits electromagnetic waves in the frequencies between 0.1 MHz and 300 GHz;

24. Takes a very serious view of the multiple health risks created by global warming on EU territory and calls for enhanced cooperation between the WHO, the Member States' monitoring authorities, the Commission and the European Centre for Disease Prevention and Control in order to bolster the early-warning system and thus to curb the harmful effects which climate change has on health;

25. Highlights that this Action Plan would benefit from being extended to cover negative impacts of climate change on human health by elaborating on effective adaptation measures necessary at Community level, such as:

- systematic public education programmes and awareness-raising;
- integration of climate change adaptation measures into public health strategies and programmes, such as communicable and non-communicable diseases, workers' health and animal diseases hazardous to health;
- proper surveillance aiming at the early detection of disease outbreaks;
- health-related early warning systems and response;
- coordination of existing environmental data monitoring networks with disease outbreak networks;

26. Calls on Member States and the Commission to respond adequately to the new threats posed by climate change such as the increased presence of emerging viruses and undetected pathogens and therefore implement new existing pathogen reduction technologies that reduce known and undetected viruses and other pathogens transmitted by blood;

27. Regrets that the current cost benefit impact assessment of the '20 20 by 2020 Europe's Climate Change Opportunity' (COM(2008)0030) only considers the health benefits of reduced air pollution at a 20% reduction of greenhouse gas emissions by 2020; calls on the Commission to ensure that the (ancillary) co-benefits to health of various levels of ambition, in line with the International Panel on Climate Change recommendations of domestic 25% to 40% as well as possibly 50% or more of greenhouse gas emission reduction by 2020, are urgently investigated and modelled into an impact assessment by the Commission;

28. Calls on the Commission to pay attention to the serious problem of mental health, considering the number of suicides in the EU, and to devote more resources to the development of adequate prevention strategies and therapies;

29. Reiterates that the Commission and the Member States should support the WHO Children's Environment and Health Action Plan in Europe, to encourage it both through EU and bilateral development policy, and to encourage similar processes outside the WHO Europe Region;

30. *Calls on the Commission to reincorporate into its second action plan the initiative SCALE (Science, Children, Awareness, Legal instruments, Evaluation) relating to the reduction of exposure to pollution, as set out in the European Environment and Health Strategy (COM(2003)0338);*

31. *Urges the Commission to work on and provide instruments that would foster the development and promotion of innovative solutions, as stressed within the Lisbon agenda framework, in order to minimise major health risks from environmental stressors;*

32. *Urges the Council to take a decision without delay on the proposal for a regulation establishing the Union Solidarity Fund, as Parliament adopted its position as long ago as 18 May 2006(10) ; considers that the new regulation, which, together with other measures, will lower thresholds for the entry into force of the Union Solidarity Fund, will make it possible to alleviate more effectively, flexibly and quickly damage caused by natural or man-made disasters; stresses that such a financial instrument is very important, particularly because it is assumed that natural disasters will occur more frequently in future, partly on account of climate change;*

33. *Recommends, as SMEs are of decisive economic importance in Europe, that the Commission should provide technical support to SMEs to make it possible, and help them, to comply with binding environmental health regulations and encourage them to make other changes which are positive from the point of view of environmental health and affect the operation of enterprises;*

34. *Advises the Commission to envisage (by 2010 and under the "second cycle" of the health and environment action plan) refocusing its initiatives on vulnerable populations and to devise new methods of risk assessment, taking into account the fundamental fact that children, pregnant women and older people are particularly vulnerable;*

35. *Urges the Commission and Member States therefore to acknowledge the advantages of the prevention and precautionary principles and to develop and implement tools enabling potential environmental and health threats to be anticipated and countered; recommends that the Commission cost the 'second cycle' of this action plan and make provision for appropriate funding covering a larger number of practical measures to reduce environmental impact on health and to implement prevention and precautionary measures;*

36. *Instructs its President to forward this resolution to the Council, the Commission, the governments and parliaments of the Member States and the WHO.*

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(1) OJ C 304 E, 1.12.2005, p. 264.

(2) OJ L 301, 20.11.2007, p. 3.

(3) Europe's environment, the fourth assessment, summary, European Environment Agency (10.10.2007).

(4) Judgment of 23 September 2003 in Case C-192/01, Commission/Denmark, ECR 2003, p. I-9693; judgment of 7 September 2004 in Case C-127/02, Landelijke Vereniging tot Behoud van de Waddenzee and Nederlandse Vereniging tot Bescherming van Vogels, ECR 2004, p. I-7405.

(5) OJ L 327, 22.12.2000, p. 1.

(6) OJ L 396, 30.12.2006, p. 1; corrected version in OJ L 136, 29.5.2007, p. 3.

(7) OJ L 40, 11.2.1989, p. 12.

(8) Published by a group of independent scientists on 31 August 2007. For details, see: [www.bioinitiative.org](http://www.bioinitiative.org).

(9) OJ L 199, 30.7.1999, p. 59.

(10) OJ C 297 E, 7.12.2006, p. 331.

## APPENDIX B

## Full Text of European Parliament Resolution – 2009

### European Parliament 2009

On April 2, 2009, the European Parliament adopted the “European Parliament resolution of 2 April 2009 on health concerns associated with electromagnetic fields (2008/2211(INI))” (10). The Document was based on the “Report on health concerns associated with electromagnetic fields”, Rapporteur: Frederique Ries (11) Committee on the Environment, Public Health and Food Safety.

*A. whereas electromagnetic fields (EMFs) exist in nature and have consequently always been present on earth; whereas, however, in recent decades, environmental exposure to man-made sources of EMFs has risen constantly, driven by demand for electricity, increasingly more specialised wireless technologies, and changes in the organisation of society; whereas the end effect is that every individual is now being exposed to a complex mixture of electric and magnetic fields of different frequencies, both at home and at work,*

*B. whereas wireless technology (mobile phones, Wi-Fi/WiMAX, Bluetooth, DECT landline telephones) emits EMFs that may have adverse effects on human health,*

*C. whereas most European citizens, especially young people aged from 10 to 20, use a mobile phone, an object serving a practical purpose and as a fashion accessory, and whereas there are continuing uncertainties about the possible health risks, particularly to young people whose brains are still developing,*

*D. whereas the dispute within the scientific community regarding the potential health risks arising from EMFs has intensified since 12 July 1999, when exposure limits for fields in the 0 Hz to 300 GHz range were laid down in Recommendation 1999/519/EC,*

*E. whereas the fact that the scientific community has reached no definite conclusions has not prevented some national or regional governments, in China, Switzerland, and Russia, as well as in at least nine EU Member States, from setting what are termed "preventive" exposure limits, that is to say, lower than those advocated by the Commission and its independent scientific committee, the Scientific Committee on Emerging and Newly Identified Health Risks(7),*

*F. whereas actions to limit the exposure of the general public to EMFs should be balanced against improvements to quality of life, in terms of safety and security, brought about by devices transmitting EMFs,*

*G. whereas among the scientific projects arousing both interest and controversy is the Interphone epidemiological study, financed by an EU contribution of EUR 3 800 000, primarily under the Fifth RTD Framework Programme(8), the findings of which have been awaited since 2006,*

*H. whereas, however, there are some points that appear to be the subject of general agreement, in particular the idea that reactions to microwave exposure vary from one person to another, the need, as a matter of priority, to conduct exposure tests under actual conditions in order to assess the non-thermal effects associated with radio-frequency (RF) fields, and the fact that children exposed to EMFs are especially vulnerable(9),*

*I. whereas the EU has laid down exposure limits to protect workers from the effects of EMFs; whereas on the basis of the precautionary principle such measures should also be taken for the sections of population concerned, such as residents and consumers,*



*J. whereas the Special Eurobarometer report on Electromagnetic Fields (No 272a of June 2007) indicates that the majority of citizens do not feel that the public authorities inform them adequately on measures to protect them from EMFs,*

*K. whereas it is necessary to continue investigations into intermediate and very low frequencies so that conclusions can be drawn as to their effects on health,*

*L. whereas the use of Magnetic Resonance Imaging (MRI) must not be threatened by Directive 2004/40/EC as MRI technology is at the cutting edge of research, diagnosis and treatment of life-threatening diseases for patients in Europe,*

*M. whereas the MRI safety standard IEC/EN 60601-2-33 establishes limit values for EMFs which have been set so that any danger to patients and workers is excluded.*

*1. Urges the Commission to review the scientific basis and adequacy of the EMF limits as laid down in Recommendation 1999/519/EC and report to the Parliament; calls for the review to be undertaken by the Scientific Committee on Emerging and Newly Identified Health Risks;*

*2. Calls for particular consideration of biological effects when assessing the potential health impact of electromagnetic radiation, especially given that some studies have found the most harmful effects at lowest levels; calls for active research to address potential health problems by developing solutions that negate or reduce the pulsating and amplitude modulation of the frequencies used for transmission;*

*3. Maintains that as well as, or as an alternative to, amending European EMFs limits, the Commission, working in coordination with experts from Member States and the industries concerned (electricity companies, telephone operators and manufacturers of electrical appliances including mobile phones), should draw up a guide to available technology options serving to reduce exposure to EMFs;*

*4. Notes that industry stakeholders as well as relevant infrastructure managers and competent authorities can already influence certain factors, for example setting provisions with regards to the distance between a given site and the transmitters, the height of the site in relation to the height of the base station, or the direction of a transmitting antenna in relation to living environments, and, indeed, should obviously do so in order to reassure, and afford better protection to, the people living close to such facilities; calls for optimal placement of masts and transmitters and further calls for the sharing of masts and transmitters placed in this way by providers so as to limit the proliferation of poorly positioned masts and transmitters; calls on the Commission and Member States to draw up appropriate guidance;*

*5. Invites the Member States and local and regional authorities to create a one-stop shop for authorisation to install antennas and repeaters, and to include among their urban development plans a regional antenna plan*

*6. Urges the authorities responsible for authorising the siting of mobile telephony antennas to reach agreement, jointly with the operators in that sector, on the sharing of infrastructure, in order to reduce the volume thereof and the exposure of the public to EMFs;*

*7. Acknowledges the efforts of mobile communications and other EMF-transmitting wireless technologies to avoid damaging the environment, and in particular to address climate change;*

*8. Considers that, given the increasing numbers of legal actions and measures by public authorities having the effect of a moratorium on the installation of new EMF-transmitting equipment, it is in the general interest to encourage solutions based on negotiations involving industry stakeholders, public*

authorities, military authorities and residents' associations to determine the criteria for setting up new GSM antennas or high-voltage power lines, and to ensure at least that schools, crèches, retirement homes, and health care institutions are kept clear, within a specific distance determined by scientific criteria, of facilities of this type;

9. Calls on the Member States to make available to the public, jointly with the operators in the sector, maps showing exposure to high-voltage power lines, radio frequencies and microwaves, and especially those generated by telecommunications masts, radio repeaters and telephone antennas. Calls for that information to be displayed on an internet page so that it can easily be consulted by the public, and for it to be disseminated in the media;

10. Proposes that the Commission consider the possibility of using funding from the Trans-European Energy Networks to investigate the effects of EMFs at very low frequencies, and particularly in electrical power lines,

11. Calls on the Commission, during the 2009-2014 parliamentary term, to launch an ambitious programme to gauge the electromagnetic compatibility between waves created artificially and those emitted naturally by the human body with a view to determining whether microwaves might ultimately have undesirable consequences for human health;

12. Calls on the Commission to present a yearly report on the level of electromagnetic radiation in the EU, its sources, and actions taken in the EU to better protect human health and the environment;

13. Calls on the Commission to find a solution enabling Directive 2004/40/EC to be implemented more rapidly and thus ensure that workers are properly protected against EMFs, just as they are already protected under two other Community acts against noise<sup>(10)</sup> and vibration<sup>(11)</sup> and to introduce a derogation for MRI under Article 1 of that Directive.

14. Deplores the fact that, as a result of repeated postponements since 2006, the findings of the Interphone study have yet to be published, the purpose of this international epidemiological study being to establish whether there is a link between use of mobile phones and certain types of cancer, including brain, auditory nerve, and parotid gland tumours;

15. Draws attention in this context to the appeal for caution from the coordinator of the Interphone study, Elisabeth Cardis, who, in the light of existing knowledge, recommends, as far as children are concerned, that mobile phones should not be used beyond reasonable limits and that landlines should be preferred;

16. Believes in any event that it is up to the Commission, which has an important contribution to the financing of this global study, to ask those in charge of the project why no definitive findings have been published and, should it receive an answer, to inform Parliament and the Member States without delay;

17. Also suggests to the Commission, to make for efficiency in policy and budget terms, that the Community funding earmarked for studies on EMFs be partly switched to finance a wide-ranging awareness campaign to familiarise young Europeans with good mobile phone techniques, such as the use of hands-free kits, keeping calls short, switching off phones when not in use (such as when in classes) and using phones in areas that have good reception;

18. Considers that such awareness-raising campaigns should also familiarise young Europeans with the health risks associated with household devices and the importance of switching off devices rather than leaving them on stand-by;

19. *Calls on the Commission and Member States to increase research and development funding for the evaluation of potential long-term adverse effects of mobile telephony radio frequencies; calls also for an increase in public calls for proposals for investigation of the harmful effects of multiple exposure to different sources of EMFs, particularly where children are concerned;*
20. *Proposes that the European Group on Ethics in Science and New Technologies be given the additional task of assessing scientific integrity in order to help the Commission forestall possible cases of risk, conflict of interests, or even fraud that might arise now that competition for researchers has become keener;*
21. *Calls on the Commission, in recognition of the public concern in many Member States, to work with all relevant stakeholders, such as national experts, non-governmental organisations and industrial sectors, to improve the availability of, and access to, up-to-date information understandable to non-specialists on wireless technology and protection standards;*
22. *Calls on the International Commission on Non-Ionising Radiation Protection and the World Health Organisation (WHO) to be more transparent and open to dialogue with all stakeholders in standard setting;*
23. *Condemns certain particularly aggressive marketing campaigns by telephone operators in the run-up to Christmas and other special occasions, including for example the sale of mobile phones designed solely for children or free call time packages aimed at teenagers;*
24. *Proposes that the EU's indoor air quality policy should encompass the study of "wireless" domestic appliances, which, like Wi-Fi for Internet access and digital enhanced cordless telecommunications (DECT) telephones, have been widely adopted in recent years in public places and in the home, with the result that citizens are being continuously exposed to microwave emissions;*
25. *Calls, given its constant concern to improve consumer information, for the technical standards of the European Committee for Electrotechnical Standardisation to be amended with a view to imposing labelling requirements whereby the transmitting power would have to be specified and every wireless-operated device accompanied by an indication that it emitted microwaves;*
26. *Calls on the Council and Commission, in coordination with the Member States and the Committee of the Regions, to encourage the introduction of a single standard designed to ensure that local residents are subjected to as low a degree of exposure as possible when high-voltage grids are extended;*
27. *Is greatly concerned about the fact that insurance companies are tending to exclude coverage for the risks associated with EMFs from the scope of liability insurance policies, the implication clearly being that European insurers are already enforcing their version of the precautionary principle;*
28. *Calls on Member States to follow the example of Sweden and to recognise persons that suffer from electrohypersensitivity as being disabled so as to grant them adequate protection as well as equal opportunities;*
29. *Instructs its President to forward this resolution to the Council, the Commission, the governments and parliaments of the Member States, the Committee of the Regions, and the WHO.*

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(1) OJ L 199, 30.7.1999, p. 59.

(2) OJ L 159, 30.4.2004, p. 1.

- (3) OJ L 91, 7.4.1999, p. 10.
- (4) OJ L 374, 27.12.2006, p. 10.
- (5) Texts adopted, P6\_TA(2008)0410.
- (6) OJ C 175, 21.6.1999, p. 129.
- (7) Opinion of 21 March 2007 adopted at the 16th plenary meeting of the Committee.
- (8) Quality of life programme, contract No QLK4-1999-01563.
- (9) March 2001 STOA study on "The physiological and environmental effects of non-ionising EMR", PE297.574.
- (10) Directive 2003/10/EC of the European Parliament and of the Council of 6 February 2003 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (noise) (OJ L 42, 15.2.2003, p. 38).
- (11) Directive 2002/44/EC of the European Parliament and of the Council of 25 June 2002 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (vibration) (OJ L 177, 6.7.2002, p. 13).



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Decision Proposed Decision of Commissioner Peevy (Mailed 11/22/2011)  
BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA  
On the proposed decision 11-03-014

Dear Commissioners:

The Board of the American Academy of Environmental Medicine opposes the installation of wireless “smart meters” in homes and schools based on a scientific assessment of the current medical literature (references available on request). Chronic exposure to wireless radiofrequency radiation is a preventable environmental hazard that is sufficiently well documented to warrant immediate preventative public health action.

As representatives of physician specialists in the field of environmental medicine, we have an obligation to urge precaution when sufficient scientific and medical evidence suggests health risks which can potentially affect large populations. The literature raises serious concern regarding the levels of radio frequency (RF - 3KHz – 300 GHz) or extremely low frequency (ELF – 300Hz) exposures produced by “smart meters” to warrant an immediate and complete moratorium on their use and deployment until further study can be performed. The board of the American Board of Environmental Medicine wishes to point out that existing FCC guidelines for RF safety that have been used to justify installation of “smart meters” only look at thermal tissue damage and are obsolete, since many modern studies show metabolic and genomic damage from RF and ELF exposures below the level of intensity which heats tissues. The FCC guidelines are therefore inadequate for use in establishing public health standards. More modern literature shows medically and biologically significant effects of RF and ELF at lower energy densities. These effects accumulate over time, which is an important consideration given the chronic nature of exposure from “smart meters”. The current medical literature raises credible questions about genetic and cellular effects, hormonal effects, male fertility, blood/brain barrier damage and increased risk of certain types of cancers from RF or ELF levels similar to those emitted from “smart meters”. Children are placed at particular risk for altered brain development, and impaired learning and behavior. Further, EMF/RF adds synergistic effects to the damage observed from a range of toxic chemicals. Given the widespread, chronic, and essentially inescapable ELF/RF exposure of everyone living near a “smart meter”, the Board of the American Academy of Environmental Medicine finds it unacceptable from a public health standpoint to implement this technology until these serious medical concerns are resolved. We consider a moratorium on installation of wireless “smart meters” to be an issue of the highest importance.

The Board of the American Academy of Environmental Medicine also wishes to note that the US NIEHS National Toxicology Program in 1999 cited radiofrequency radiation as a potential Carcinogen. Existing safety limits for pulsed RF were termed 'not protective of public health' by the Radiofrequency Interagency Working Group (a federal interagency working group including the FDA, FCC, OSHA, the EPA and others). Emissions given off by 'smart meters' have been classified by the World Health Organization International Agency for Research on Cancer (IARC) as a Possible Human Carcinogen.

Hence, we call for:

- An immediate moratorium on "smart meter" installation until these serious public health issues are resolved. Continuing with their installation would be extremely irresponsible.
- Modify the revised proposed decision to include hearings on health impact in the second proceedings, along with cost evaluation and community wide opt-out.
- Provide immediate relief to those requesting it and restore the analog meters.

Members of the Board  
American Academy of Environmental Medicine

## American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



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July 12, 2012

The Honorable Julius Genachowski  
Commissioner  
Federal Communications Commission  
445 12<sup>th</sup> Street SW  
Washington, DC 20554

Dear Chairman Genachowski:

The American Academy of Pediatrics (AAP), a non-profit professional organization of 60,000 primary care pediatricians, pediatric medical subspecialists, and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents, and young adults strongly supports the proposal for a formal inquiry into radiation standards for cell phones and other wireless products. The Academy encourages the Federal Communications Commission (FCC) to vote to move forward with this inquiry in an expeditious manner.

The FCC has not assessed the standard for cell phone radiation since 1996. According to industry groups, approximately 44 million people had mobile phones when the standard was set; today, there are more than 300 million mobile phones in use in the United States. While the prevalence of wireless phones and other devices has sky-rocketed, the behaviors around cell phone uses have changed as well. The number of mobile phone calls per day, the length of each cell phone call, and the amount of time people use mobile phones has increased, while cell phone and wireless technology has undergone substantial changes. Many more people, especially adolescents and young adults, now use cell phones as their only phone line and they begin using wireless phones at much younger ages.

The FCC standard for maximum radiation-exposure levels are based on the heat emitted by mobile phones. These guidelines specify exposure limits for hand-held wireless devices in terms of the Specific Absorption Rate (SAR), which measures the rate the body absorbs radiofrequency (RF). The current allowable SAR limit is 1.6 watts per kilogram (W/kg), as averaged over one gram of tissue. Although wireless devices sold in the United States must ensure that they do not exceed the maximum allowable SAR limit when operating at the device's highest possible power level, concerns have been raised that long-term RF exposure at this level affects the brain and other tissues and may be connected to types of brain cancer, including glioma and meningioma.

In the past few years, a number of American and international health and scientific bodies have contributed to the debate over cell phone radiation and its possible link to cancer. The International Agency for Research on Cancer (IARC), part of the

United Nations' World Health Organization, said in June 2011 that a family of frequencies that includes mobile-phone emissions is "possibly carcinogenic to humans." The National Cancer Institute has stated that although studies have not demonstrated that RF energy from cell phones definitively causes cancer, more research is needed because cell phone technology and cell phone use are changing rapidly. While a definitive link between cell phone radiation and brain cancer has not been established, these studies and others clearly demonstrate the need for further research into this area and highlight the importance of reassessing the current SAR to determine if it is protective of human health.

The AAP believes the inquiry to reassess the radiation standard presents an opportunity to review its impacts on children's health and well-being. In the past, such standards have generally been based on the impact of exposure on an adult male. Children, however, are not little adults and are disproportionately impacted by all environmental exposures, including cell phone radiation. In fact, according to IARC, when used by children, the average RF energy deposition is two times higher in the brain and 10 times higher in the bone marrow of the skull, compared with mobile phone use by adults. While the Academy appreciates that the FCC is considering investigating whether the emission standards should be different for devices primarily used by children, it is essential that any new standard for cell phones or other wireless devices be based on protecting the youngest and most vulnerable populations to ensure they are safeguarded throughout their lifetimes.

Finally, in reviewing the SAR standard, the FCC has the opportunity to highlight the importance of limiting media use among children. The Academy has found potentially negative effects and no known positive effects of media use by children under the age of two, including television, computers, cell phones, and other handheld wireless devices. In addition, studies consistently show that older children and adolescents utilize media at incredibly high rates, which potentially contributes to obesity and other health and developmental risks. In reviewing the SAR limit, the FCC has the opportunity to improve the health of our nation by highlighting the importance of limiting screen time and media use for children and adolescents.

The AAP supports the proposal for a formal inquiry into radiation standards for cell phones and other wireless products and the Academy encourages the FCC to vote in favor of moving forward with this investigation. If you have questions or concerns, please contact Kristen Mizzi in the AAP's Washington Office at 202/347-8600.

Sincerely,

Robert W. Block, MD FAAP President



## Appendix E      **RCNIRP Resolution: Electromagnetic Fields from Mobile Phones: Health Effects on Children and Teenagers**

*“The Resolution evolved from scientific statements adopted by RNCNIRP in 2001, 2004, 2007, 2008 and 2009, taking into account contemporary views and actual scientific data. The Resolution represents a viewpoint of the professional scientific community and is meant for public dissemination, for the consumers of the mobile telecommunications services, as well as for the legislative and executive authorities who develop and implement health protection, environmental, communication, scientific and safety policies.”*

*“ ... Thus, for the first time in the human history, children using mobile telecommunications along with the adult population are included into the health risk group due to the RF EMF exposure. A situation has emerged that cumulative EMF exposure of children may be comparable to adult exposure and may be equal to the levels of occupational exposure of workers. At the same time, the society, with all its administrative and social structures, remain in a “waiting” position.”*

### ***“Priority measures aimed at protection of children and teenagers***

*Taking into account the RNCNIRP position and the precautionary measures suggested by WHO, the Committee considers that urgent measures must be taken because of the inability of children to recognize the harm from the mobile phone use and that a mobile phone itself can be considered as an uncontrolled source of harmful exposure.*

- 1. It is required that the information that a mobile phone is a source of RF EMF is clearly shown on the phone’s body (or any other telecommunication device).*
- 2. It is required that the “User’s Guide” contains information that a mobile phone (personal wireless communication tool using electromagnetic communication method, etc.) is a source of harmful RF EMF exposure. Usage of a mobile phone by children and adolescents under 18 years old is not recommended by the Sanitary Rule SanPiN 2.1.8/2.2.4.1190-03, and mobile phone use requires implementation of precautionary measures in order to prevent health risks. Mobile phone use by pregnant women is not recommended in order to prevent risk for a fetus.*
- 3. The easiest way to reduce RF EMF exposure is to move the mobile phone away from one’s head during the phone call which may be achieved by using the hands-free sets (protection by distance). Shortening the call duration is another way to reduce the exposure (protection by time).*
- 4. The RNCNIRP considers it is reasonable to develop mobile phones with reduced EMF exposure (with hands-free sets, included limitation functions, such as limitation of the number of daily phone calls, possibility of forced limitation of phone call duration, etc.).*
- 5. It is required to include courses on mobile phones use and issues concerning EMF exposure in the educational program in schools.*
- 6. It is reasonable to set limits on mobile telecommunications use by children and adolescents, including ban on all types of advertisement of mobile telecommunications for children (teenagers) and with their participation.*
- 7. The RNCNIRP is ready to assist the mass-media in their awareness-raising work and educational activities in the area of EMF and, in particular, to provide information about the newest research of the impact of EMF on human health and the measures to curb the negative impact of this physical agent.*
- 8. Better safety criteria for children and teenagers are required in the nearest term. Features of the developing organism should be taken into account, as well as the significance of bioelectric processes for human life and activities, present and future conditions of EMF, prospects of technological and technical development should be addressed in a document of legal status.*
- 9. Development of a funded national program for studying possible health effects from chronic EMF exposure of the developing brain is necessary.”*

**RUSSIAN NATIONAL COMMITTEE  
ON NON-IONIZING RADIATION PROTECTION**

June 19, 2012

Moscow, Russia

**Recommendations**

**of the Russian National Committee on Non-Ionizing Radiation Protection of the necessity  
to regulate strictly the use of Wi-Fi in kindergartens and schools**

Mobile cellular communication is getting more popular among children of different ages. Children excel adult population in the mobile phone calls use. At the same time, there is a daily brain exposure of EMF RF. In addition, all children are constantly exposed of EMF RF from base stations. The problem of the children's health maintenance in the development of wireless communications was set up as priority by World Health Organization.

Electromagnetic radiation from Wi-Fi creates an additional burden for the child brain, whose body is in a state of development and the formation of mental activity. During this period, children are most susceptible to adverse environmental factors (WHO, publication number 3, April 2003).

It is necessary to note that the existing standards have been developed, without consideration of this additional exposure of EMF.

*RussCNIRP consider necessary:*

1. Ministry of Health and other organizations, responsible for the population safety (including children), should pay attention to the regulation of Wi-Fi use in kindergartens and schools; to the strengthening of sanitary control of the Wi-Fi using and to the development of an appropriate regulatory framework.
2. To recommend the usage of wired networks in schools and educational institutions, rather than a network using wireless broadband systems, including Wi-Fi.

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