



19th January 2004

Subject: GSM Europe¹ comments on the Draft Baseline Report on Research Needs in the framework of the European Environment and Health Strategy (COM 2003)338 final)

A. Introduction

GSM Europe, the regional interest group of mobile communications operators of the GSM Association, welcomes the efforts undertaken by the European Commission and many stakeholders in relation to the SCALE initiative of the Commission's European Environment & Health Strategy. GSM Europe welcomes the idea to include radio frequency (RF) electromagnetic fields (EMF) into the Research Needs of the future Environment and Health Action Plan 2004-10. The European and global mobile communications industry is itself extensively funding independent scientific research based on the WHO research agenda in order to increase the scientific knowledge on RF EMF.

As well, we welcome the comprehensive overview on the state of science and research on EMF delivered with the Draft Baseline Report on Research Needs in the framework of the European Environment and Health Strategy (COM 2003)338 final). GSM Europe would like to make some comments in relation to this part in the following. In order to keep them as short as possible, we concentrate on those points where we have most concerns.

B. General Comments

Extensive research has already been undertaken on electromagnetic fields and broad research efforts are currently made in this field. The consensus view of many expert scientific groups is that there is no convincing evidence of an adverse health risk from exposure to EMFs from mobile communications services at levels below those specified in current international scientific guidelines such as ICNIRP. We note the outcome of two recent expert reviews.

¹ GSM Europe is the European interest group of the GSM Association, the premier global body behind the world's leading wireless communications standard. GSM Europe represents around 143 operators in 50 countries/areas in Europe and counts around 380 million subscribers. For more information, visit the website at www.gsmeurope.org

Sweden: SSI Report, December 2003

The focus of this report is on epidemiological and experimental cancer research, blood-brain barrier and heat shock proteins. In none of these areas have there been breakthrough results that have warranted firm conclusions in one way or the other. It is worth noting, however, that intense research is currently ongoing in several countries and new data will gradually become available. Given the complexity of the research area it is essential that both positive and negative results be replicated before accepted. Given the increase of new technologies, it is essential to follow various possible health effects from the very beginning, particularly since such effects may be detected only after a long duration, due to the prolonged latency period of many chronic diseases. Thus, more research is needed to address long-term exposure, as well as diseases other than those included in the ongoing case-control studies.

UK: AGNIR Report, January 2004

In aggregate the research published since the IEGMP [Stewart 2000] report does not give cause for concern. The weight of evidence now available does not suggest that there are adverse health effects from exposures to RF fields below guideline levels, but the published research on RF exposures and health has limitations, and mobile phones have only been in widespread use for a relatively short time. The possibility therefore remains open that there could be health effects from exposure to RF fields below guideline levels; hence continued research is needed.

On this basis and in the light of the other research needs laid down in the Baseline Report Research Needs it appears questionable if EMF should be priority number one. It is to be assumed that this is more a concession to perceived public concern about potential adverse health effects than based on scientific facts.

Moreover, after reading the whole EMF part, the reader might get the impression, that the author is convinced that there are adverse health effects at low levels of exposure which 'only' have to be proven. Exemplary for this underlying tone is the formulation in line 744 where it says "the effects are not yet established", instead of "no effects have yet been established". Further examples may be given. Therefore the document appears to be biased in tone.

For a reader with low background knowledge on EMF it might be complicated to understand the differences in scientific knowledge between radio frequency EMF and extremely low frequency (ELF) EMF. Reason for that is that only at a late stage in the EMF part of the document the differentiation is made. Problematic with this is that also the general remarks at the beginning of the document do not equally apply to RF and ELF as there is up to now no convincing scientific evidence of adverse health effects from RF EMF at levels below exposure guidelines.

Also, to avoid any misunderstanding and for more precision the term 'fields' rather than the term 'radiation' in the context of electromagnetism should be applied to avoid any mistake between ionizing and non-ionizing radiation.

Concerning the considerations on emerging and future technologies in the document it must be stated that UMTS, TETRA, Bluetooth and WLAN are not complete new technologies but derivatives of current radio technologies (broadcasting, GSM, etc). Therefore, in the absence of evidence to the contrary it is permissible and possible to draw conclusions and apply findings from research in these fields to similar technologies (extrapolation). Thus, in the case of technologies using RF EMF, there is no need to presume that at low levels of exposure they could harm human health. As a result it is not necessary to build any hurdles and preconditions for introduction of such technologies. But it is important that the results of scientific research of existing technologies are verified on the basis of the specifications of the newer ones.

From a formal point of view the whole part in the document making policy recommendations (line 794 to 818) simply do not belong to a document which should define research needs and is not covered by the mandate to the Technical Working Group 'Research Needs'.

The whole document is intended to build a solid basis for decision making. It would be immoderate from a scientific and inadequate from a policy-making perspective to draw from a state of the science perspective policy conclusion which goes beyond research issues. In a public decision-making process many more factors have to be taking into account than solely science.

Beyond this formal argument it is important to note that there are as well objections in relation to the content of the given policy recommendations. First of all it is questionable if the state of the scientific knowledge justifies the depth of the Intervention, esp. when referring to different frequencies (RF, ELF). Then the choice of recommendations appears to be arbitrary and neither do they reflect the broadness of technologies and applications nor the differences (usage, frequencies etc.) between them.

When referring to precautionary principle, esp. in the definition of the European Commission, certain preconditions prior to the application of the principle have to be fulfilled – among these are proportionality and the requirement of a cost-benefit analysis. Neither is fulfilled for RF EMF. It is thus inadequate of the author to refer to the Commission definition and then simply make arbitrary policy recommendations. Particularly no assessment is made in relation to policies dealing with other potential risks by other physical or chemical agents. The decision to apply the precautionary principle is not solely to be based on a scientific reasoning – other factors (environmental, economic, social) have to be taken into account as well. The Baseline Report Research Needs should provide the scientific foundation for decision-makers.

Instead of, it could be meaningful to include research needs in the field of social science, i. e. in relation to risk communication, decision-making under uncertainty, risk governance etc.

These comments refer to both the Baseline Report document and its Executive Summary document.

C. Text Comments

GSM Europe would welcome the incorporation of both the general comments made above and the detailed text changes below.

[See next page- comments and proposed changes underlined]

4 Research Areas

4.1 EMF

Environment and Health Implications Of Electromagnetic Field Exposure

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Additional keywords:

combined effects, children, regulations

Summary

Electromagnetic Field (EMF) exposure from equipment such as power lines, radio and TV broadcasting antennae or mobile phone base stations frequently being considered by public concerns as ~~are~~ a potential source of risk for the public health and the environment that present a difficult set of challenges for decision-makers. This document aims to provide overviews on: the state of the research on health and environmental implications of EMF exposure in Europe, the ongoing research activities, the possibilities to improve linkage to policy development primarily, the future research needs, including also regulation issues and development of guidelines.

As to research priorities and non-priorities, a consensus has emerged over the recent years within the scientific community and the various sponsors and governments, on the use of research recommendations consisting of five priority lists covering epidemiology, human, animal, cellular studies, and dosimetry and their main requisites span across three levels: (i) ongoing studies (now in progress and critical for future risk assessment), (ii) short-term or urgent needs (studies not yet begun but that should be initiated as soon as possible) and (iii) long-term or future needs. Such recommendations should be followed in future European research strategies. Overall, one of the major pending issue is that of ~~the a~~ potential health risks related to the exposure of children. The International Agency for Research on Cancer (IARC) has reported that : an association has been found between exposure to on the basis of epidemiological studies there exists a possible link between ELF magnetic field exposure at high levels and leukaemia in children. The noted a lack of supporting data from animal studies and insufficient evidence for ELF electric fields exposure and for other diseases in adults and children. It is of utmost importance to investigate whether this is a causal relationship. This document, explores in details the research needs in: Extremely Low Frequency (ELF), Radio ~~F~~ frequency Radiation (RFR) fields, epidemiological studies, exposure of children, emerging technologies, combined exposure, long-term and occupational exposure, low- or non-priorities, regulations and guidelines.

Introduction

Among ~~the increasingly~~ environmentally related health issues and potential health hazards which are claimed to be related to new modified and

combined exposures to environmental factors, exposure to electromagnetic fields (EMF) meets a ~~continuing significant growing~~ public concern ~~in several Member States.~~ ~~also i~~In view of the ~~significant growth in adoption gigantic diffusion~~ of applications based on these types of non-ionizing radiations EM fields, ~~population exposure is almost universal and thus it is important to establish if an~~ ~~The whole environmental domain is thus "filled" with EMF, and this represent an ever-present potential~~ environmental hazard ~~exists~~.

Research on the health implications of EMF exposure is a scientific area in which a significant number of studies are ongoing at many different levels (international and national, public institutes, industrial research, activities of normative and regulatory bodies). However, the large number of published studies creates a dramatic difficulty in providing relevant and timely input for policy development. This can result in misinterpretation or inappropriate extrapolation of scientific findings and hence in concerns of all stakeholders since health implications ~~cannot may not be~~ adequately ~~be~~ addressed. Moreover, new and emerging technologies, which continuously appear, ~~may~~ generate ~~more and more~~ concerns and raise ~~new~~ questions that research must address.

Based on these considerations and on the mandate of the Technical Working Group "Research Needs" in the framework of the EC SCALE project, the present document was developed to provide overviews on:

- the state of the research on health implications of EMF in Europe;
- ongoing activities and future needs on the possibilities to improve linkage to policy development primarily in the field of the health implications of EMF exposure; this includes also the relative roles for national, regional and European research actions, on the health implication of EMF exposure;
- suggestions and recommendations for future research needs, priorities and opportunities on the topics related to EMF exposure and health.

~~the future needs and priorities for regulation issues and development of guidelines, involving both the European Commission and other authorities at national level, and regulatory bodies.~~

Section 1. Research activity in Europe

Research on possible health implications of EMF exposure is being carried out by a number of industrial, national and international funding bodies, to investigate the biological effects and potential adverse health effects of EMF. Research related to EMF and health is currently active in Europe, as compared to other parts of the world. ~~Such type of research was initiated in the USSR and later moved to the USA.~~ In the last ten years the level of research has decreased in North America, ~~especially in relation to ELF~~, and increased in Europe, ~~especially on RF exposures~~. The main reason for this change has been ~~the~~ increased public concern in Europe about EMF in the environment, firstly with high-voltage power lines and now with mobile telephony handsets and

base stations. National programmes have been set up in many countries and about 10 research projects came recently as a supplement in the [5th FP-EC Framework](#) programme of the European Commission. At the present time, [the European](#) countries where research is most active are [France](#), Italy, Germany, [UK](#) and Finland.

The various approaches that are needed to assess [potential](#) health risks (epidemiology, human, animal and cell studies) are all well represented in Europe. The critical mass has been reached in many laboratories where both physical and biological approaches can be combined. Epidemiology is also strong in Europe with several major ELF studies, in particular in the Nordic countries, and the large EC Interphone project on mobile phones and head-and-neck tumours, activated in the course of the 5th EC Framework Programme. Several major expert-committee reports have been published in ~~the~~ recent years, in particular on mobile telephony and health.

Several initiatives have helped foster and organise European research activity (COST actions 244, 244bis and 281, about 12 research projects in the [5th FP Framework](#) Programme, and one currently starting [a](#) Coordination Action in the 6th FP Programmes), but there is still a lack of coordination in research objectives and means, in particular [among between](#) the national programmes.

Section 2. Policy development, research perspective and relative roles for national, regional and European research actions

EMF exposures from equipment such as power lines, [radio and TV broadcasting antennae](#) or mobile phone base stations are [frequently being considered by public concerns as](#) a potential source of risk that present a difficult set of challenges for decision-makers. These include: determining whether EMF exposure is a hazard and what is the potential health impact, i.e. risk assessment; recognizing the reasons why the general public may be concerned, i.e. risk perception; and implementing policies that protect public health and respond to public concerns, i.e. risk management. Responding to these challenges requires the involvement of individuals or organizations with the right set of competencies, combining relevant scientific expertise, strong communication skills and good judgment in the management and regulatory areas. This will be true in any context, be it local, regional, ~~or even~~ national or trans-national, [such as the EC](#).

European research in this area is internationally acknowledged for the level of expertise, the quality of its research, the impact of its results at any level (scientific, technological, political, regulatory). Most of the research activity in Europe is funded by the European Commission (about 12 ongoing research initiatives) and also within the ongoing national programmes (e.g., in Finland, France, Germany, Italy, Norway, Poland, Slovenia, Sweden, UK, etc.), all of them with a European dimension, involving international partners. Moreover, European research in this area is in close contact with non-scientific stakeholders, such as European industry associations, customer associations, and regulatory bodies.

Ongoing research need a dynamic infrastructure to help to develop, validate,

maintain, and update a common knowledge database at the EU level on EMF health implications. This common basis for decision makers will increase the coherence of the approaches taken in the various Member States and help restore public confidence. This is one of the main priorities to be considered in order to provide timely and effective scientific inputs (priorities, gaps, prospects of on-going research and results) and relevant advice to the EU and Member States. Within the 6th FP, the European Commission has started to address this issue via a Coordination Action aimed to provide a framework for the coordination and dissemination of the results of the research activities in Europe. However, this initiative should be considered only as a first step for the improvement of the linkage to policy development primarily from the research perspective, on the health and environmental concern related to electromagnetic fields. To achieve this goal, future additional actions should be ~~continuously~~ established to consolidate ~~the~~ ongoing initiatives and the achieved results.

Section 3. Research needs

A consensus has emerged over the recent years within the scientific community and the various sponsors and governments, on the use of the [EMF](#) research recommendation agenda of the WHO, within the framework of the International EMF project.

These recommendations cover the ELF and the RF ranges, but neither static fields nor intermediate frequency ranges. They have been established by independent experts and revised recently for the RF range. They consist of five priority lists covering epidemiology, human, animal, cellular studies, and dosimetry. Moreover, overarching issues are documented that help define the requisites for each approach. For each of these classes, they span across three levels: (i) ongoing studies (now in progress and critical for future risk assessment), (ii) short-term or urgent needs (studies not yet begun but that should be initiated as soon as possible) and (iii) long-term or future needs.

It is recommended that such recommendations should be followed in future European research strategies. However, ELF topics have not been reviewed recently and there are gaps in the spectrum that have not been considered. It is thus recommended that some research projects are initiated in these frequency ranges, as they are increasingly used in emerging applications (EAS2, RFID3, millimetre wave radars, etc.).

Overall, one of the major pending issue is that of ~~the potential~~ health risks related to the exposure of children. [Based on epidemiological studies](#) ~~An an~~ association has been [reported by IARC found](#) between exposure to ELF [magnetic fields](#) at high levels and leukaemia [in children](#). [IARC has noted the absence of supporting evidence from animal or cellular studies](#). It is of utmost importance to investigate whether this is a causal relationship [or a chance finding](#). Various approaches should be used in the laboratory to test the hypotheses. Of equal importance is the question related to the use of mobile

² Electronic article surveillance

³ Radiofrequency identification

telephones by children. More should be done to know whether they are more sensitive than adults to this type of local exposure.

It is also urgent to learn more about potential health risks associated with the use of very high strength static magnetic fields such as those found in new MRI equipment (> 2 Tesla). Studies of bioeffects at high levels, i.e. close to the known critical effects as defined by the International Commission on Non Ionizing Radiation Protection (ICNIRP), are needed to decrease the uncertainties in the exposure guidelines.

In the following, these items will be described with some more details.

Extremely Low Frequency fields - ELF

ELF are known to induce electric fields and currents in the body. No adverse health effects have been established below ICNIRP limits but some research suggests that biological effects exist below the limits. The current gaps in knowledge can be identified mainly in: i) study on the ELF magnetic fields in their "2B" classification by IARC in relation to childhood leukaemia; ii) investigation on the possible influence on epidemiological study results related to selection bias, transients and/or other mechanisms; iii) Replication and extension of some in vitro studies.

Radio Frequency fields Radiation-- RFR

Based on the WHO RF research agenda revised in June 2003, ~~The~~ the current gaps can be mainly identified on topics in which ~~the no~~ effects ~~have are not~~ yet been established and more research is needed, such as subjective effects (hypersensitivity), blood brain barrier, heat shock proteins. Additional research and development are also needed in exposure assessment, development of personal dosimeters (for epidemiological studies, exposure assessment of populations for risk estimation) and identification of exposure assessment specific of children.

As to the interaction mechanisms, although there are no novel relevant hypotheses to test, more work on micro-dosimetry at the cellular or sub-cellular levels might give new information about the targets of RF.

The main efforts in in-vivo and in-vitro studies should be provided on assessing possible ~~the~~ effects on the immune system, on the blood brain barrier and neural damage, and on the test of new signals in large scale chronic studies, on the stress and heat shock proteins induction and phosphorylation.

The future epidemiological studies should mainly address a prospective cohort study of mobile phone users and studies on base station exposure, considering also the aspects related to their feasibility. As to the base station, the research needs are mainly on potential long-term effects, also including the performing of studies capable to distinguish the effect of base station exposures from other RF sources.

Medical and health care applications and devices

The importance of the EMF exposure, also at occupational level, due to medical devices is due to the continuously diffusion and increase of such applications in the daily life of all Europeans. Future research needs in this

area should address occupational exposure of health operators to EMF at any frequency and modulation and long-term exposure of patients to devices and/or treatments of various types. This includes exposure to EMF fields produced by imaging devices, prosthesis such as cochlear implants, and diagnostic and therapeutic treatments such as magnetic stimulation of the nervous system and bone reparation.

Research on emerging and future technologies

~~Future Research-research~~ on EMF and health should ~~consider face~~ the ~~endless~~ introduction of new technologies and devices using electromagnetic ~~radiationfields~~ and ~~whether there is a~~, ~~with the~~ consequent need ~~to perform~~ ~~of performing~~ new, previously-unexpected research. Emerging technologies ~~are coming~~ with expected large-scale wide-spread use ~~include such as~~ telecommunication systems (UMTS, TETRA, Bluetooth, WLAN) with new smart applications; digital-broadcasting technology which are expected to replace present analogue techniques; electronic article surveillance systems together with smart labels applied for antitheft devices and product management with systems both for entrance and indoor placement; personal identification systems for access monitoring and/or limitation, new fee-charging solutions, health care applications, transport technologies such as magnetic levitation systems, anti-collision radar, vehicle piloting and surveillance, traffic control, road pricing, new industrial processing and manufacturing technologies; household and office applications such as inductive heating, wireless communication, power line communication, electronic power control, new medical technologies such as high field magnetic resonance imaging including spectroscopy for diagnostic and intrasurgical application, medical robotics, telemedicine, magnetotherapeutic applications, technologies used by authorities and military.

New and emerging ~~EMFRF~~-emitting technologies are associated with the following changes: existing frequency bands are used more intensively; the use of existing frequency bands is modified and allocated to new technologies; new frequency bands are used such as in the ultra-high frequency region; new signal structures are applied, e.g., for coded and multiplexed access; sources will become more and more mobile, numerous and omnipresent; both in the RF and the ELF range, exposure will evolve to multiple frequencies and broadband frequency content; partial-body exposure from different sources at different sites of the body will become more and more common.

The rapid evolution of this ongoing dynamic technological process shortens the reaction time both for biological health-related research, technology assessment, and risk communication. ~~This leads to an increased need for proactive measures. Therefore, a series of recommendations can be made, that can be summarized as follows:~~

~~Existing reference limits for EMF-exposure which are derived for whole-body exposure to homogenous fields should be further developed to allow a practicable assessment of partial body exposure to inhomogeneous fields.~~

- ~~Product standards should leave as large as practicable an exposure margin to reserve space for new technologies and account for the increasing number of EMF contributions from mobile sources.~~
- ~~There is a need for strategies for monitoring public exposure to EMF to become aware of unintended interference of EMF sources.~~
- ~~Research funds should be allocated to investigate the possible health impact of new signal structures, including ultra wide-band pulses and new frequencies.~~
- ~~Manufacturers should be encouraged to adopt a precautionary approach according to COM 2000(1) and make minimization of EMF emissions a design criterion.~~
- ~~Manufacturers should include EMF-related health issues in the risk management file of their products.~~
- ~~Manufacturers should inform the user about relevant EMF emissions and possible restrictions concerning the associated conditions and/or requirements of use.~~
- ~~An European radiation protection committee should be installed to scientifically monitor the EMF related development and give advice to the commission.~~
- ~~Specific attention should be given to adequate risk communication preparing and accompanying the introduction of new technologies rather than reacting to already arisen public concern.~~
- ~~Health risk assessment including EMF-related aspects should be made and communicated prior to large scale introduction of new technologies.~~

Occupational EMF exposure

EMF occupational exposure is characterised by more complex frequency pattern than the exposure of general public. Different sources of ELF, RF as well as intermediate frequencies of EMF exist in occupational environment. EMF exposure dose (exposure intensity multiplied by exposure duration) of workers is generally much stronger than the one received by the general public from all kinds of electrical devices and even from power lines and mobile phone systems. Nowadays, very often occupational exposure to simultaneous multi-frequency fields ~~and radiation~~ comes from more than one emission sources as well as exposure to pulse or non-sinusoidal fields of single source exist. Moreover, modern industrial technologies can also be associated with more multi-path ~~irradiationsignals~~, so that combined exposures between mutual physical agents on one hand and between physical and chemical agents on the other are more likely to occur in industry than in daily [livelife](#).

From those reasons, besides the above mentioned research needs for further EMF investigations, additionally specific research should be dedicated to

workers prevention. More complex physical characteristics of exposure need specific assessment methods, for example when exposure assessment of non-sinusoidal fields is done according to the ICNIRP guidelines (multi-frequency exposure factor) an overestimation of exposure conditions can occur. There is specific need to study occupational exposure and outcome in groups of workers that have a high EMF exposure. Since the number of workers being in this category is small, it is necessary to perform a multinational study in order to get large enough sample to give a meaningful results. There is need to pay more attention to workers with implants or chemical treatment, pregnant women and young workers exposure limits, exposure prevention methods and computer dosimetry of complex interaction between EMF sources, workers body and environment elements.

Combined exposure

The future of research on EMF and health will certainly encompass investigations of the synergies between EMF and other environmental factors since most health hazards are multifactorial in nature. It is thus recommended to design and use experimental models that include exposure to EMF and one other physical, chemical or biological factor.

Low- or non-priorities

In this context of social concern and limited resources, there are some research axes that should not be continued or initiated. More epidemiological studies on ELF and childhood cancer are not needed. In vitro experimenting on cultured cells is less informative than animal studies and should have a lower priority. The new techniques of genomics and proteomics are very powerful but should be used with caution and aimed at improving the quality of animal investigations and not at determining the mechanisms of the action of the EMF.

Section 4. Regulation issues and development of guidelines

The regulation issues and development of guidelines in the field of the electromagnetic field devices and health and environmental effects of EMF are mainly related to both technical standards, that limit the EMF emissions from devices, and exposure standards, that limit EMF exposure to people and are scientifically-based. At the European level, the first task is performed by CENELEC, which has already issued several product standards and is in the process of developing others. However, it is important that a continuous activity is maintained, in particular with regard to emerging technologies that require regulation of new sources of exposure. As regards exposure standards, there is a need for harmonised standards, i.e. for national regulations based on a common approach. Important achievements have been gained by the European Union with a Recommendation issued by the Council in 1999 for the protection of the general public and with the development of a Directive for the protection of workers that is close to final approval. Both are based on the guidelines of the International Commission on Non Ionizing Radiation Protection (ICNIRP), an international body formally recognised by the World Health Organization (WHO) and by the International Labour Office. ICNIRP periodically revises its guidelines in the light of new research

findings and on reviews of the scientific literature carried out by ICNIRP itself as well as by WHO and the International Agency for Research on Cancer. It is of crucial importance that European recommendations and directives are revised accordingly. This task is best performed by establishing and maintaining tight liaisons with the above mentioned organisations. Within the general context of harmonisation of national standards, there is special need to reconcile standards adopted in Western and Eastern European countries. Divergences exist, that are related on one side to different interpretation and evaluation of the scientific database, on the other side on different approaches to protection and to the development of safety standards. The harmonisation process is therefore tightly connected to the development of common research programmes and to the establishment of networks for the continuous exchange of data and experience. Finally, there is the absolute need that both workers and the general public trust that national and international standards are scientifically well founded, and adequate to protect human health. Therefore, the development of standards should be accompanied by continuous information to, and communication with the public.

Conclusions

The main conclusions on the future strategy and needs related to the environmental and health implications of electromagnetic field exposure can be summarized as follows:

- State of the research: research on possible health implications of EMF exposure is currently active in Europe, with research programmes at both national and European Commission level.
- Linkage to policy development: ongoing research needs a dynamic infrastructure to help to develop, validate, maintain, and update a common knowledge database. The Coordination Action that the European Commission is starting in the 6th Framework Programme to this purpose is a first step and needs future continue actions to consolidate the achieved results.
- Future research priorities can be summarized as:
 - Extremely Low Frequency (ELF): study on the effects of the magnetic fields in their "2B" classification by IARC, and replication and extension of some in vitro studies.
 - Radio Frequency Radiation (RFR): studies on blood brain barrier, heat shock proteins, immune system, neural damage, subjective effects (hypersensitivity), test of new signals in large scale chronic studies, studies on micro-dosimetry at the cellular or sub-cellular levels.
 - Epidemiological studies: prospective cohort study of mobile phone users, studies on base station exposure (long-term effects), development of exposure and personal assessment, with particular attention to that one specific for children,

influence of selection bias, transients and/or other mechanisms, particularly for ELF exposure.

- Exposure of children: ~~studies on the association found between exposure to ELF at high levels and leukaemia, to investigate whether that can be considered a causal relationship; (This is described above and below as low or non-priority.)~~ studies on potential higher sensitivity of children to exposure to EMF.
- Emerging technologies: performing new, previously-unexpected research, with an increased need for proactive measures due to the endless introduction of new EMF technologies and devices at new frequency and modulation.
- Long-term and occupational exposure: occupational exposure of workers to high levels of EMF, of health operators at any frequency and modulation and long-term exposure of patients to EMF produced by devices and/or treatments of various type.
- Combined exposure: design and use experimental models that include combined exposure to EMF and other physical, chemical or biological factors, as well as personal conditions (e.g., health status, pregnancy).
- Low- or non-priorities: more epidemiological studies on ELF and childhood cancer are not needed. In vitro experimentation on cultured cells should have a lower priority. Genomics and proteomics should be used with caution and aimed at improving the quality of animal investigations and not at determining the interaction mechanisms of EMF.
- Regulations and guidelines: monitoring of emerging technologies that require regulation of new sources of exposure and development of harmonised standards, particularly to reconcile the standards adopted in Western and Eastern European countries.

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