

ESPOSIZIONE OCCUPAZIONALE: LE ATTIVITÀ IN CORSO NELL'AMBITO DI EMF-NET

Paolo Ravazzani

Istituto di Ingegneria Biomedica, Consiglio Nazionale delle Ricerche

Milan, Italy



Esposizione dei lavoratori ai
campi elettromagnetici
Pontecchio Marconi, 16 dicembre 2005

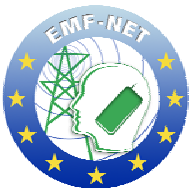




Outline

The European Commission Coordination Action EMF-NET

- Main objectives
- Approach
- Workplan
- Reports
- European Fast Response Team



<http://emf-net.isib.cnr.it>



European Commission Coordination Action EMF-NET

- EFFECTS OF THE EXPOSURE TO ELECTROMAGNETIC FIELDS:
FROM SCIENCE TO PUBLIC HEALTH AND SAFER WORKPLACE
- European Commission 6^o Framework Program
- Thematic Priority: Policy Support and Anticipating Scientific and
Technological Needs
- March 2004 – February 2008
- More than 50 European Organizations (considering both
participants and associated participants)



EMF-NET: Involved Stakeholders

- European Commission
- European policy and health authorities
- Industry associations
- Trade Union associations
- Consumer associations
- Regulatory bodies (providing advice)
- Scientific community
 - EC Projects Coordinators
 - Representatives of EU research at National level
 - Representatives of other research activities
- Experts

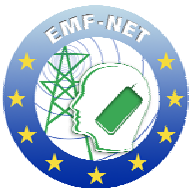




EMF-NET aims

To provide:

- A framework for the co-ordination of the results of the ongoing research activities on EMF and health (EC projects and other national and international actions)
- Policy relevant interpretation/advice for the facilitation of policy development options by the EU (and other bodies).





Workplan

- Identification and definition of *Scientific Key Issues* (SKI) and *Interpretation Key Issues* (IKI) on EMF and health
- Production, systematic update, and validation of SKI and IKI Reports to be communicated at several levels:
 - level 3: full scientific review, mainly addressed to the scientific community;
 - level 2: interpretation for policy making, mainly addressed to policy makers;
 - level 1: other documents addressed to differently interested persons, journalistic version of the summary scientific review understandable by the broad public, prepared on a case by case basis



Approach

- Technical Working Groups of experts
 - *Preparation of SKI Reports*
 - *Preparation of IKI Reports*
- Finalization through the advice of the Steering Committee and the Advisory Board
- Steering Committee approval
- Delivery to the European Commission services

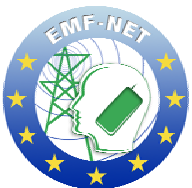
- Dissemination (Website, Newsletters)
- Organization of workshops/seminars/round-tables
- **European Fast Response Team on EMF and Health**



Workplan

- **MT1: Scientific research on EMF health effects**
 - Laboratory applications
 - Epidemiological research on E
- **MT4: Risk per**
- **MT5: Observa**
 - Monitoring
 - Monitoring
 - Coordinatio

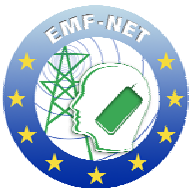
<i>Main Task</i>	<i>Main Task Coordinators</i>
MT1	Jukka Juutilainen Joschen Buschmann
	Elisabeth Cardis Maria Feychting
MT2	Jolanta Karpowicz
MT3	Theo Samaras
MT4	Demosthenes Papamelethiou
MT5	Norbert Leitgeb
	Bernard Veyret
	Gyorgy Thuroczy



EMF-NET Outputs

- Interpretation reports
- Short reports
- EFRT Documents
- Newsletters (every 3/6 months)
- Proceedings of conferences/workshops
- Books
- Info on the activities of European Projects

EMF-NET website:



<http://emf-net.isib.cnr.it>

Interpretation Reports

- Report on research needs, *August 2005*
- Report on laboratory studies on ELF fields (*expected by December 19, 2005*)
- Report on cancer-related studies (*expected by December 23, 2005*)
- Report on effects of IF exposure (*expected by December 31, 2005*)
- Report of NRI in clinical practice in Europe (*expected by December 31, 2005*)
- Report on surveys on THz radiation at occupational site (*expected by JAN 2006*)

- Short report on EMF Hypersensitivity (*expected by FEB 2006*)
- Short report on genotoxicity end EMF (*expected by MAR 2006*)
- Short report on medical implants and workers (*expected by MAY 2006*)





Report on research needs, August 2005

State of the research at European Commission level

- EC 5FP projects ended.
- EMF-NET, CA FP6, ending 2008;
- ANGIOSKIN, STREP FP6, on the application of EMF for DNA and drug delivery, ending 2007;
- EMFnEAR, RTD Project EC DG SANCO, on possible effects of UMTS cellular phone on hearing, ending 2007;
- COST Action 281, on potential implications from mobile telecommunication systems, ending 2006.

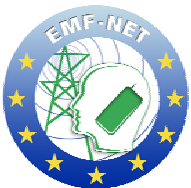




Report on research needs, August 2005

Research needs and priorities

- Static magnetic fields
- Extremely Low Frequency (ELF) fields
- Radiofrequency Radiation
- Dosimetric studies for experimental, human and epidemiological studies
- Research evaluation

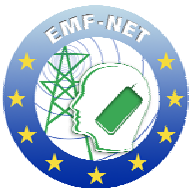




Report on research needs, August 2005

Research needs and priorities - Static magnetic fields

- Exposures above 2 T
- CNS functions and cardiovascular effects in humans
- Cancer, development, cardiovascular, immune system and CNS responses in animals
- Mechanisms such as radical pair reactions and enzymatic activity, gene expression, mutagenicity and cell transformation in vitro.
- Theoretical and computational studies on magnitude and direction of induced currents and fields.
- **Large epidemiological studies on workers on cancer and pregnancy outcomes in occupational situations.**

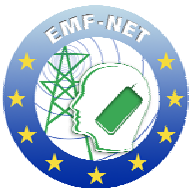




Report on research needs, August 2005

Research needs and priorities - ELF

- Experimental studies and interaction of fields on:
 - Biophysical mechanisms to support epidemiological results;
 - Combined exposure to magnetic fields and other physical, chemical or biological agents
 - Developmental and cognitive effects of prenatal exposures and on effects on the nervous system and behavior
 - Role of exposure duration, intermittency and transients
 - Replication and extension of in vitro studies, such as those related to genotoxic effects
 - Role of ELF in initiating or promoting leukemia





Report on research needs, August 2005

Research needs and priorities - ELF

- Epidemiological studies and human exposure on:
 - Nature of the association with childhood leukaemia and neurodegenerative diseases, including population-based studies using different epidemiological designs (in particular cohort studies) less prone to selection bias than are case-control studies;
 - **Large studies of highly exposed populations (such as workers)**
 - Methodological investigations of the possible influence of selection and other bias on epidemiological findings
 - Investigations on the possible association with neurodegenerative diseases and pregnancy outcome.



Report on research needs, August 2005

Research needs and priorities - Radiofrequency Radiation

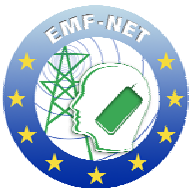
- Experimental studies and interaction of fields on:
 - Cognition, EEG and sleep in both children and adults.
 - Exposure to different parts of the body for adults, children and the fetus.
 - Development and maturation of the CNS, behavior, and blood-brain barrier from prenatal exposures in animals.
 - Replication of in vitro studies on genotoxic effects.
 - Prolonged exposure during early life, especially in immature animals



Report on research needs, August 2005

Research needs and priorities - Radiofrequency Radiation

- Epidemiological studies and human exposure on:
 - Risk of brain and CNS tumors in children and adolescents
 - Large-scale cohort studies of mobiles users on risk of other diseases.
 - **Large-scale cohort studies of highly exposed workers**
 - **Potential long-term effects of environmental and occupational whole-body exposure from base stations and other sources provided adequate personal dosimeters availability, end-points carefully defined and feasibility and informativity adequately demonstrated.**



Epidemiological studies should evaluate associations with exposure metrics other than average field strength, such as field variability in time and in space, variability of the investigated individuals, ...



Report on research needs, August 2005

Research needs and priorities - Dosimetric studies for experimental, human and epidemiological studies

- Development of micro-dosimetry at cellular or sub-cellular levels
- Methods and tools for reliable assessment of exposure levels, specially for children
- Improvement of dosimetry for body-worn or hand-operated devices close to other sites of the body than the head;
- Development of dosimetric models for children and pregnant women;
- Extending dosimetry to intracorporal temperature changes
- **Developing exposure monitoring strategies for complex and inhomogeneous situations and personal exposure assessment.**





Report on research needs, August 2005

Research needs and priorities - Research evaluation

- Interpretation of scientific data for use by policy-makers, standards setters and health and environmental authorities should be supported to consolidate scientific knowledge, facilitate interpretation of the data, increase transparency and public trust, and help to define and coordinate further research.

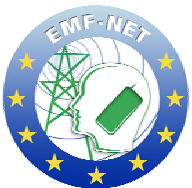




European Fast Response Team on EMF and Health: Documents

On mobile communication topics (8):

- Health and safety of mobile communication equipments **NOV 2005**
- RBS and brain currents **MAY 2005**
- Wolf and Wolf paper on RBS and cancer **MAR 2005**
- Hands-Free Kits for Mobile Phones **FEB 2005**
- 2004 Report by the Board of NRPB **JAN 2005**
- Health Effects of Telephone Masts **DEC 2004**
- Cellular Phones on Human Fertility **JUL 2004**
- TETRA System **MAY 2004**



On other topics (2)



Workpackages on EMF Occupational Exposure

- Measurements methods for the assessment of workers exposure to EMF at ELF, IF and RF
- Numerical dosimetry for the assessment of risk caused by EMF at ELF, IF and RF exposure in working environment





Activities on EMF Occupational Exposure

- Guidelines on methods for measurement and modeling in occupation environment (due date FEB 2008)
- Reports on appropriate measurements in various EMF frequency ranges ELF, IF, RF (due date MAY 2006 and FEB 2008)
- Reports on needs and feasibility of numerical simulations for the assessment of workers exposure to various frequency EMF in real conditions, and on the efficiency of different methods (due date MAY 2006 and FEB 2008)
- Guidelines on practical use of methods for induced currents and energy absorption modelling (due date FEB 2008)



Activities on EU Directive APR 2004 on Occupational Exposure

- *International Workshop on Electromagnetic Fields at Work Places* organised by the Central Institute for Labour Protection - National Research Institute (CIOP-PIB) in collaboration with EMF-NET (Warsaw, September 5-7, 2005)
- Preparatory meeting for an European Workshop on Information about EU Directive on Occupational Exposure (Warsaw, September 8, 2005)
- EMF-NET representatives invited speakers on EU Directive in Special Sessions of Conferences in Europe (including the next ICOH Milan, June 2006)

