

# Research on EMF Risk Communication: Trends & Challenges

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Peter Wiedemann  
Research Centre Juelich, INB-MUT

- Risk perception and risk policy
- Current research in EMF risk communications
- Research challenges
- Summary & outlook

Overview

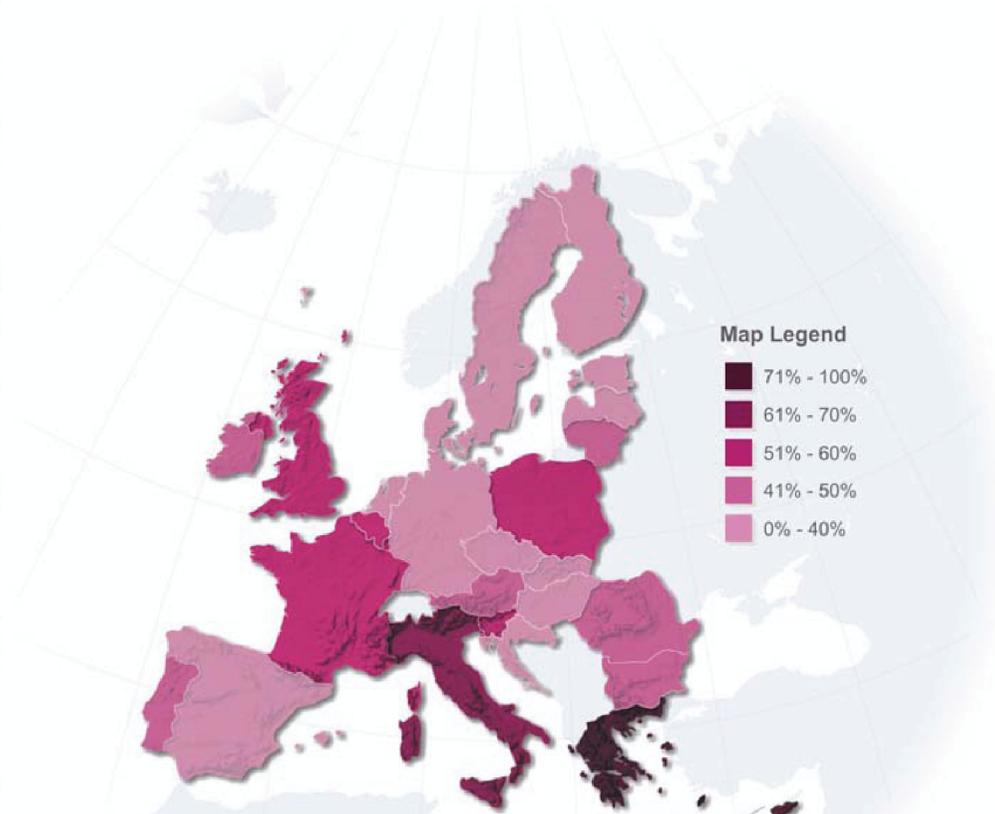
# Risk perception & risk policy



Question: QB2. Are you concerned over the potential health risks of electromagnetic fields?

Answers: Very concerned + fairly concerned

 EL	86%
 CY	82%
 IT	69%
 LU	60%
 SI	59%
 PL	58%
 MT	57%
 BE	52%
 FR	52%
 UK	51%
 PT	49%
 EU25	48%
 IE	47%
 AT	41%
 LT	41%
 LV	39%
 ES	38%
 SK	38%
 DE	35%
 NL	31%
 CZ	31%
 EE	31%
 HU	31%
 DK	30%
 FI	28%
 SE	27%
 BG	46%
 RO	45%



Eurobarometer study 2006

EMF risk perception

Risk perception has to be considered in policy decisions.

How to do it?

- There are established methods for studying risk perceptions.
- Dialogue and participation provide best opportunities for conflict resolution.

Addressing risk perceptions

**moa**  
mobile operators association research report

### Developing Mobile Networks

Ten Commitments to best siting practice

With 47 million mobile phone users throughout the UK, network operators are committed to providing the radio base stations required to meet customer service demands.

However while many people are benefiting from mobile phone technology, there are still some concerns about potential adverse health risks, particularly relating to radio base stations.

In line with the Health Reports recommendations for a precautionary approach to mobile phone technology and health, the mobile phone operators are addressing these concerns directly.

The operators believe communication and consultation are essential to ensuring that the process of building mobile phone networks is transparent, and that the public is informed and involved.

The ten Commitments to best siting practice are the operators' means of making sure that these goals are achieved.

Thema Mobilfunk  
Erfolgreiche Abstimmungsprozesse beim Aufbau der Mobilfunknetze

6

WORKING WITH THE  
**COMMUNITY**

Handbook on mobile telecoms community consultation for best siting practice

United States Environmental Protection Agency Washington DC 20460 April 1988 EPA-67-020

**EPA** **Seven Cardinal Rules of Risk Communication**

HOME TEAM

ACTION PLAN ACTIVITIES GATEWAY TECHNICAL WORKING GROUPS DOCUMENTS NEWS & EVENTS

### European Information System on Electromagnetic Fields Exposure and Health Impacts

**EIS-EMF**

There is a growing public concern on the potential adverse health effects of human exposure to EM radiation, particularly from GSM base stations whose number will rise even more to implement the latest 3-G developments (UMTS). Scientific uncertainties over the possible health impacts of EMF and the inability of the scientific community to clearly identify and characterize potential risks are inducing public debate.

To address this problem there has been a targeted R&D planning and funding by FP5 at EU level and by Member States at National level. As a result, various ongoing R&D activities are expected to provide data to clarify this state of things.

In order to integrate the emerging scientific results into policy-making priorities, two major projects, the **EIS-EMF** and **EME-NET**, funded by the European Commission, are currently at the launching stage.

JRC is a partner of the **EME-NET** consortium. In this role JRC is in charge of developing and operating a Web-based information exchange tool among **EME-NET** partners and a knowledge-based database that includes all project results. On this basis, EIS-EMF benefits from the timely and robust infrastructure of this consortium; which provides the essential scientific review and input for developing risk communication contents and tools.

The synergy and interface between the two projects is a strategic asset:

- EIS-EMF**: a policy-driven/support project, that processes the EME-NET results into risk communication contents ready to use by policy makers

Risk communication guidelines

Examples

- (1) Accept and involve the public as a partner.
- (2) Plan carefully and evaluate your efforts.
- (3) Listen to the public's specific concerns.
- (4) Be honest, frank, and open.
- (5) Work with other credible sources.
- (6) Meet the needs of the media.
- (7) Speak clearly and with compassion.

Covello and Allen, 1988

Seven cardinal rules of RC

### Maxim of Quality: Truth

- \* Do not say what you believe to be false.
- \* Do not say that for which you lack adequate evidence.

### Maxim of Quantity: Information

- \* Make your contribution as informative as is required for the current purposes of the exchange.
- \* Do not make your contribution more informative than is required.

### Maxim of Relation: Relevance

- \* Be relevant.

### Maxim of Manner: Clarity

- \* Avoid obscurity of expression.
- \* Avoid ambiguity.
- \* Be brief.
- \* Be orderly.

Grice, 1975

Everyday communication

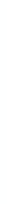
“ Risk communication is not just a matter of good intentions ... Risk messages must be understood by the recipients, and their impacts and effectiveness must be understood by communicators. To that end, it is not longer appropriate to rely on hunches and intuitions regarding the details of message formulation. ”

Morgan & Lave, 1990, 358

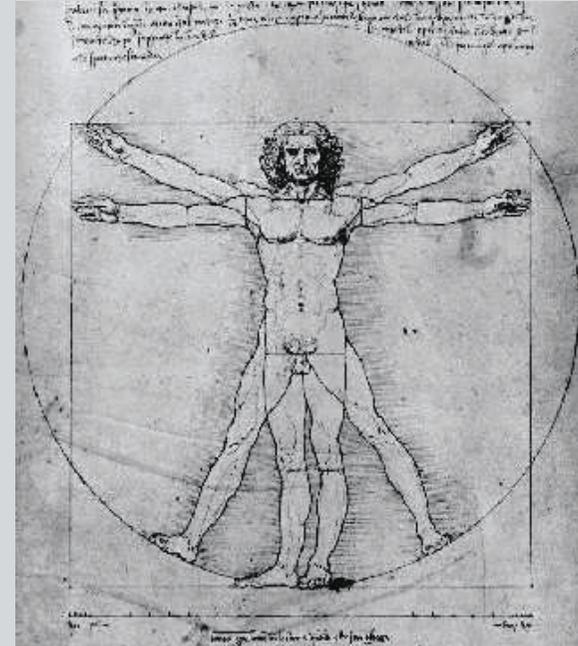
Need for evidence based  
risk communication

We need the best available evidence for policy recommendations.

Therefore it is essential to apply appropriate research methods for rigorous inquiry.



# Current Research



## RP & RC research programs in the EMF field

- International EMF project (WHO)
- EMF-Net (EU)
- COST Action BM 0704 (EU)
  
- DMF (GER)
- Swiss Foundation Mobile Communication & SNF (CH)
- MTHR (UK)
- GSM/MMF
  
- ZonMW (NL)

Research support and programs

## Search for publications

standard query  I detailed query

[how was the query composed?](#)

50 articles concerning 'risk perception' found, showing 1 to 10

1 2 3 4 5 >>

descending ordered by year change

\* **Influence of information about specific absorption rate (SAR) upon customers' purchase decisions and safety evaluation of mobile phones.** [RIS](#)  
Wiedemann PM, Schutz H, Clauberg M in: Bioelectromagnetics 2008; 29 (2): 133 - 144

\* **[Operational aspects of risk perception in the electromagnetic fields exposition]** [not english](#)  
Pennarola E, Barietta R, Quarto E, Pennarola R in: G Ital Med Lav Ergon 2007; 29 (3 Suppl): 785 - 787

**TEMP** \* **Knowledge and perceptions of the health effects of environmental hazards in the general population in Italy.** [tmp](#)  
Bianco A, Nobile CG, Gnisci F, Pavia M in: Int J Hyg Environ Health 2007

\* **Pooled analyses of effects on visual and visuomotor performance from exposure to magnetic stray fields from MRI scanners: application of the Bayesian framework.** [techn./dosim.](#)

de Vocht F, Glover P, Engels H, Kromhout H in: J Magn Reson Imaging 2007; 26 (5): 1255 - 1260

\* **Who reaps the benefits, who bears the risks? Comparative optimism, comparative utility, and regulatory preferences for mobile phone technology.** [RIS](#)  
White MP, Eiser JR, Harris PR, Pahl S in: Risk Anal 2007; 27 (3): 741 - 753

\* **Brief report: How do adolescents perceive the risks related to cell-phone use?** [RIS](#)  
Martha C, Griffet J in: J Adolesc 2007; 30 (3): 513 - 521

\* **Health response of two communities to military antennae in Cyprus.** [epidemiol.](#)  
Preece AW, Georgiou AG, Dunn EJ, Farrow SC in: Occup Environ Med 2007; 64 (6): 402 - 408

\* **Public responses to precautionary information from the Department of Health (UK) about possible health risks from mobile phones.** [RIS](#)  
Barnett J, Timotijevic L, Shepherd R, Senior V in: Health Policy 2007; 82 (2): 240 - 250

[DETAILS](#) [FIELD](#) \*\*\* **Effects of information and 50 Hz magnetic fields on cognitive performance and reported symptoms.** [med./biol.](#)

50 Citations in the data base of the EMF portal,

Issues addressed:

- General risk perceptions
- Trust & confidence
- Target groups
- SAR-values
- Precaution taking

Empirical research

- Perception studies outnumber communication studies.
- Surveys are the most prominent research method.
- The psychometric paradigm is the most often used research model.
- Only few experimental studies are available.
- Replication studies are very rare.

Evaluation of the available  
empirical research

# Research challenges



- Addressing the right questions
- Improving evidence based risk communication research
- Filling the theoretical gaps
- Making use of advanced methods
- Implementing interdisciplinary research
- Establish a critical mass of research

Challenges

Research should focus:

- Perceptions (both: risk and benefits) of new medical applications (MRI, and new commercial applications (RFID) of RF EMF
- Dynamics of perceptions in context with attitude & belief change
- Science literacy (hazard vs. risk, intuitive evidence assessment) & „communication“ literacy
- Risk communication aspects (e.g., SAR values risk indicators, exposure parameters precautionary measures)
- Siting conflicts and participatory decision making

Addressing the right questions

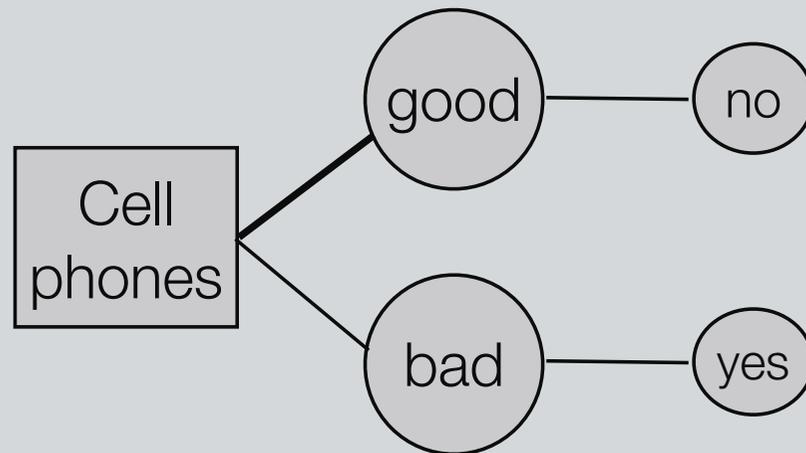
- Using the right methods for the selected research question
- Raising methodological standards, e.g. replication
- Applying more experimental research for testing causal relationships
- Ranking available evidence for crucial research questions

Improving evidence based risk  
communication research

- Lack of theory driven research design
- Strengthening the link to basic research on attitude change and belief formation
- Focussing on hypothesis driven research and model development

Filling the theoretical gaps

- Most risk perception studies are based on explicit measures
- Evaluations are predominately grounded in automatic processes



Meta-cognitive Model, Petty et al.  
2006

Filling the theoretical gaps

Example

Tool box for social & psychological research has lot more to offer than interviews and questionnaires:

- Rep Grids
- Means ends analysis
  
- Conjoint analysis
- Information gathering analysis
- Implicit measurements
- fMRI

Making use of advanced  
methods

# Implicit Association Test (IAT)



The IAT is a method for indirectly measuring the strengths of associations among concepts“ Nosek et al. 2006



- Target objects (Cell phone, base stations)
- Stimuli (good, bad)
- Response options
- Reaction time measure

Making use of advanced  
methods

Example

cell phone  
or  
good

base station  
or  
bad

press key „e“

press key „i“

Making use of advanced  
methods

Example

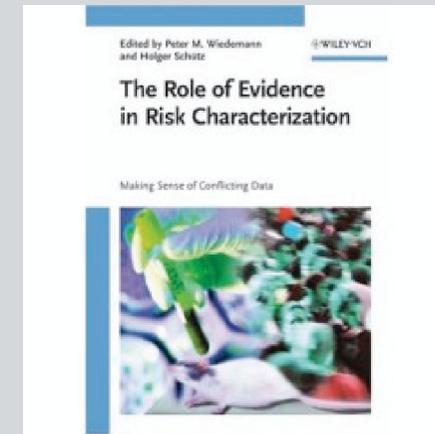
- Risk communication researchers should establish cooperation with epidemiologists & toxicologists in order to get the science right
  - Selecting the right concepts
  - Wording the questions

Implementing interdisciplinary  
research

Evaluating conflicting evidence  
regarding potential health risks

Animal research  
Epidemiology  
Genotoxicology  
Case studies

Evidence based Medicine  
Reviewing evidence



Implementing interdisciplinary  
research

Example

- Social science research is often small-scale
- Issues need to be studied on a broader scale
- Research should be conducted in cooperate networks for large scale, comparative studies

Establishing a critical mass

