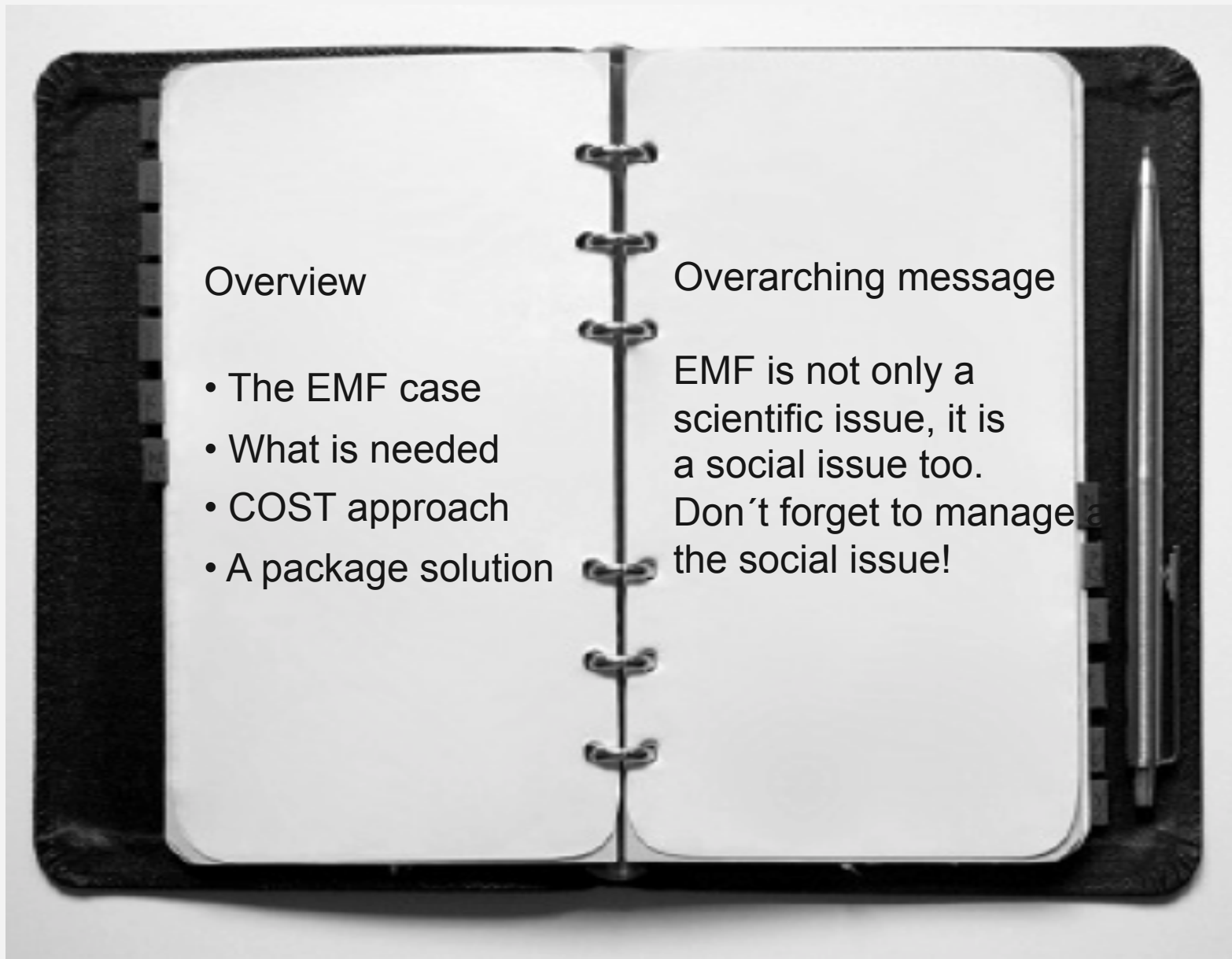




EMF- Exposure: Risk Communication in the Face of Uncertainty

Peter M. Wiedemann,
KIT-ITAS , 2010



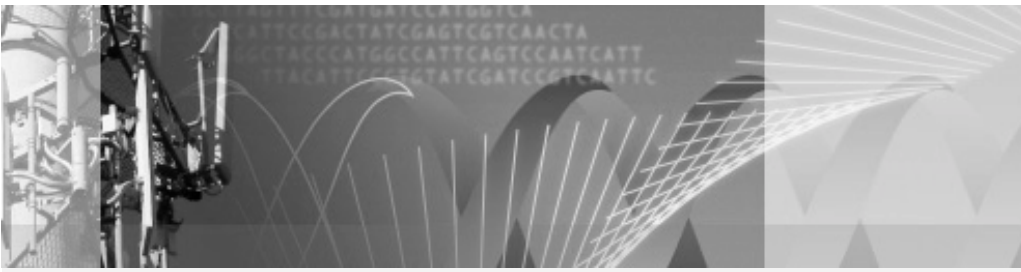
Overview

- The EMF case
- What is needed
- COST approach
- A package solution

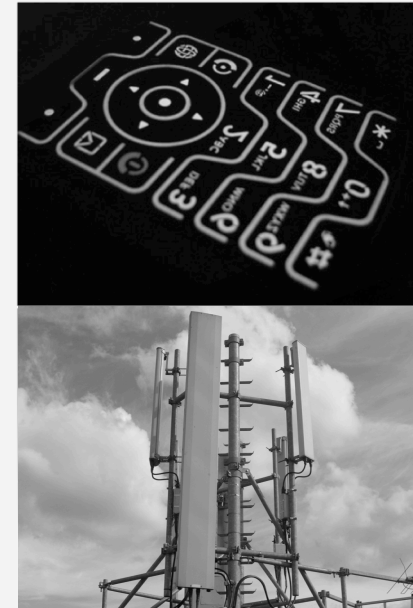
Overarching message

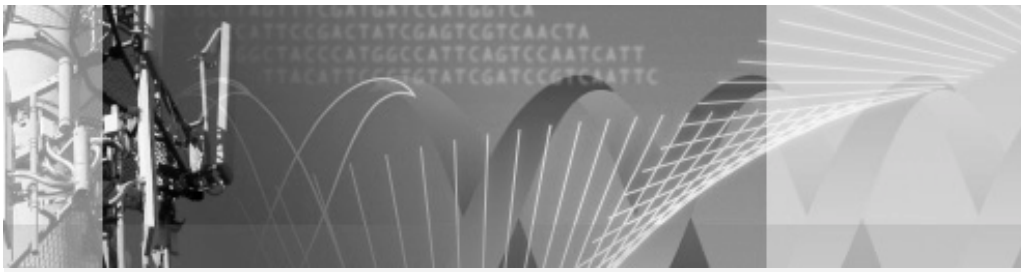
EMF is not only a scientific issue, it is a social issue too.

Don't forget to manage the social issue!



The EMF case



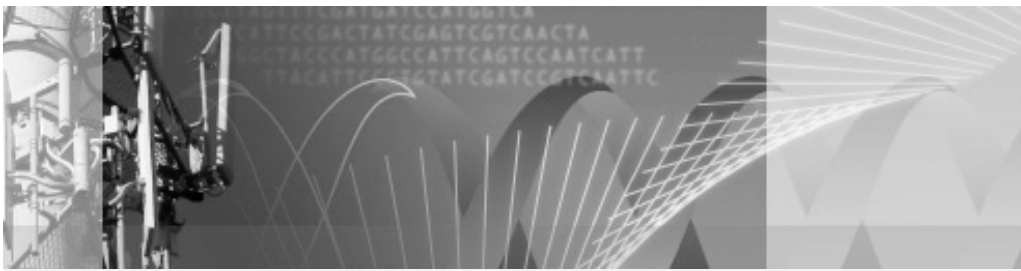


F case

Social Worries

- Base stations
- Cell Phones





SWITCHED

[MAIN](#)

[AUDIO/VIDEO](#)

[CAMERAS](#)

[CAR TECH](#)

[CELL PHONES](#)

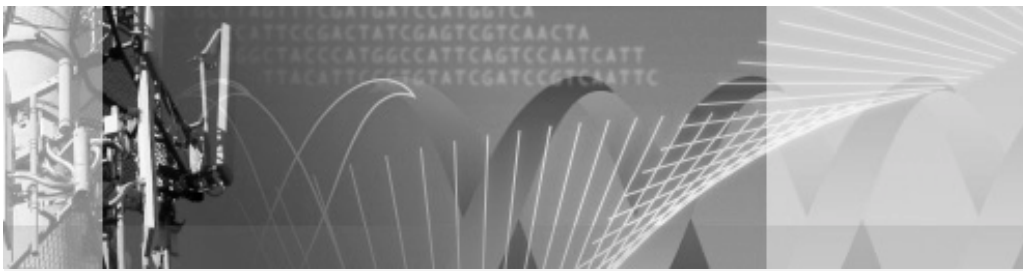
[COMPUTERS](#)

CELL PHONES

Cell Phones a Greater Threat Than Smoking, Asbestos?

BY TIM STEVENS — MAR 31ST 2008 AT 10:32AM





TIMES ONLINE

[NEWS](#) | [COMMENT](#) | [BUSINESS](#) | [MONEY](#) | [SPORT](#) | [LIFE & STYLE](#) | [TRAVEL](#) | [DRIVING](#) | [AI](#)

[UK NEWS](#) | [WORLD NEWS](#) | [POLITICS](#) | [SCIENCE](#) | [ENVIRONMENT](#) | [WEATHER](#) | [TECH & WEB](#) | [VIDEO](#)

[Where am I?](#) > [Home](#) > [News](#) > [World News](#) > [Europe News](#)

From [The Times](#)

August 22, 2009

Electrosensitive refugees from wireless technology head for Drôme



Anny Boury wraps up in a metal-fibre shawl to shield herself from EMF. Claudie, in aluminium cape, says microwaves excite the brain, like nicotine

TIMES RECOMMENDS

- > The Frankenfood that improves you
- > Obama is right to take his time on Afghanistan
- > Wanted: female candidate, pretty, no opinions

ROBERT ENKE MEMORIAL



Jetzt
in die

We can't ignore the links between mobile phones and cancer like we did with tobacco, top scientists tell U.S. Congress

By BARRY WIGMORE

Last updated at 11:58 AM on 26th September 2008

HEALTH MAIN

HEALTH A-Z

September 25, 2008 -- Updated 1951 GMT (0351 HKT)

[MIXX](#) [SHARE](#) [EMAIL](#) [SAVE](#) [PRINT](#)

Scientists debate possible cell phone link to brain cancer

STORY HIGHLIGHTS

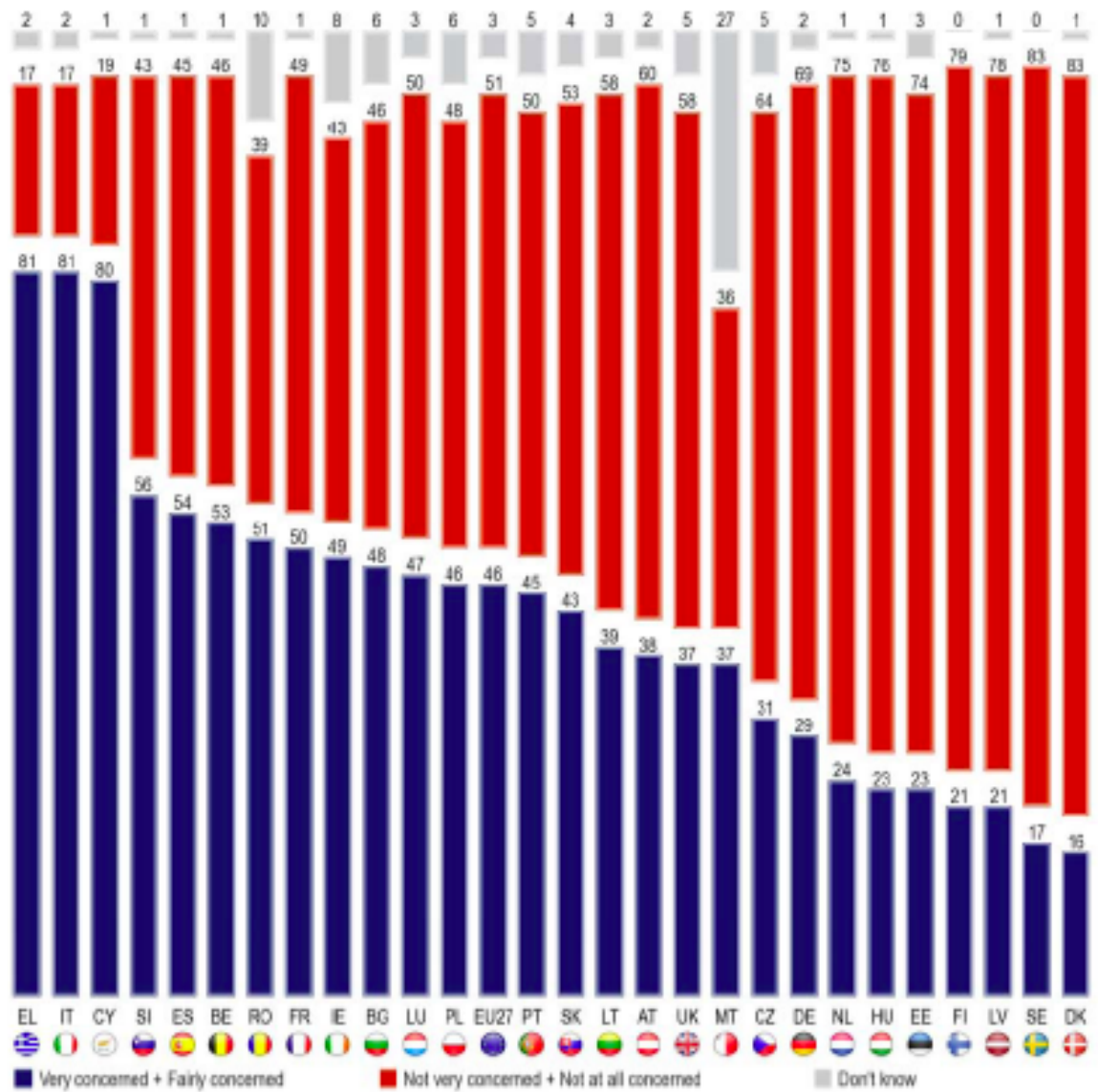
- Studies conflict; do not consistently show cell phones cause cancer, expert says
- Expert says he cannot say they are definitely dangerous or definitely safe
- Children are at higher risk for cancer-causing radiation from phone, scientist says
- Woman at House panel hearing says her husband's brain cancer from cell phone

[Next Article in Health »](#)

- Scientific debate
 - Long term effects of exposure below the value limits
 - Children's special vulnerability
 - Hypersensitivity
- Regulatory debate
 - What are the right exposure limits?
 - How much precaution is precaution enough?
- Governance debate
 - Who should make the EMF policy decisions?
 - On what criteria should the decisions be based?
- Validity debate
 - Who provides the right information?

The EMF case: Perceived EMF Risks

How concerned are you about the potential health risks of electromagnetic fields?

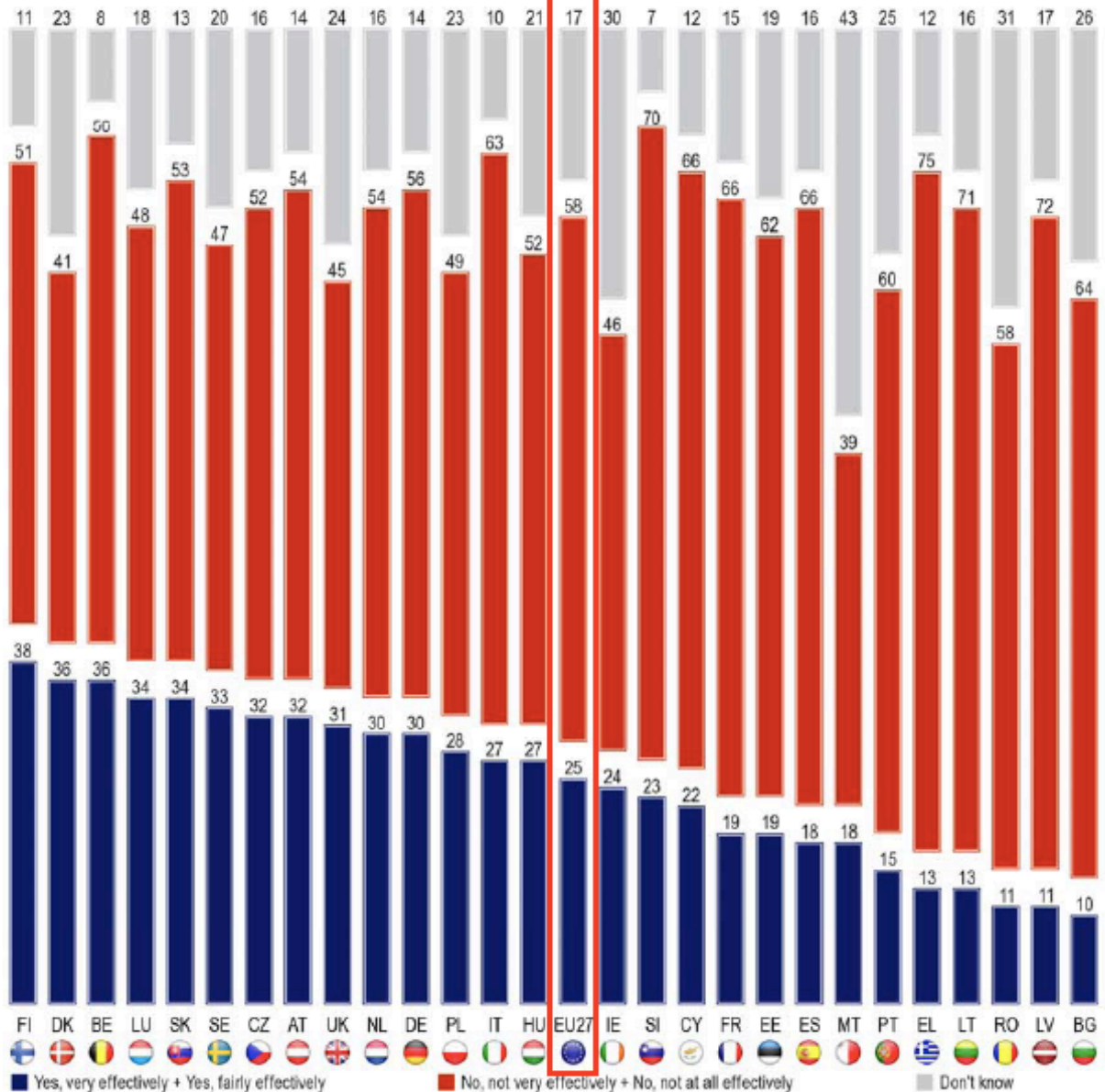


Eurobarometer 2010

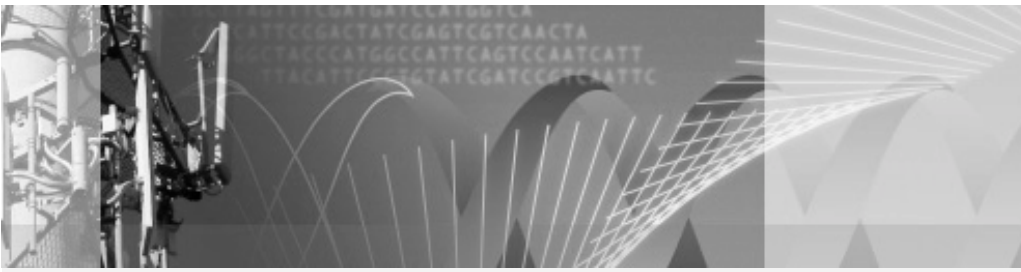
Peter Wiedemann

The EMF case: Perceived risk management

In your opinion, do public bodies act effectively or not to protect you from health risks related to electromagnetic fields?



Eurobarometer 2010



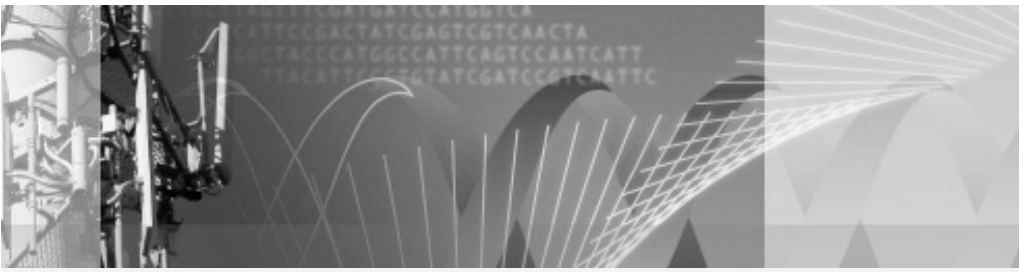
What is needed





needed

- Using the right science in a right way to improve risk assessment
- Applying the right risk management framework
- Tailoring the right messages
- Putting the right people at right places to get your messages across



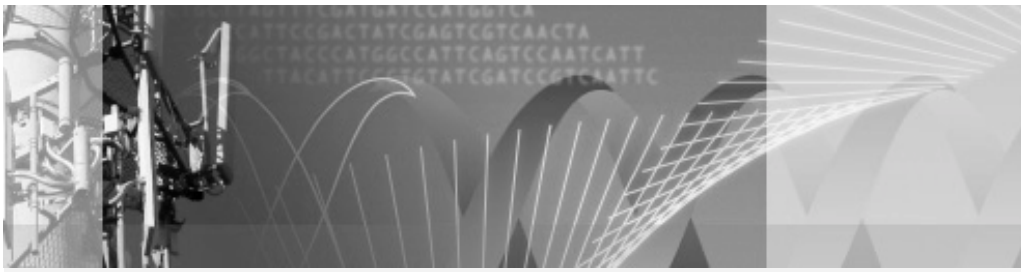
Package solution „EMF policy“

AMC²

- Assessment
- Management
- Cooperation
- Communication



- Using the right science in a right way to improve risk assessment
- Applying the right risk management framework
- Tailoring the right messages
- Putting the right people at right places to get your messages across



Policy

- Using the right science in a right way to improve risk assessment
- Applying the right risk management framework
- Tailoring the right messages
- Putting the right people at right places to get your messages across

Peter Wiedemann



EMF risk assessment

International EMF Project (Ongoing) 2000
Federal Directorate 2000 May Stewart
Report UK Independent Expert Group 2001 May British Medical Association
Mobile Phones and Health, an interim report 2002 January MTHRUUK Mobile
Telecommunications and Health Research Programme 2002 January Dutch
Report Health Council of the Netherlands, advisory report 2003 December
Swedish Report Swedish Radiation Protection Authority (SSI) First annual
report from SSI's Independent Expert Group on Electromagnetic Fields 2003
December AGNIR Report NRPB's Independent Advisory Group on Non-Ionising
Radiation Report 'Health Effects from Radiofrequency Electromagnetic
Fields' 2004 January Dutch Report Health Council of the Netherlands
Electromagnetic Fields Annual Update 2003 2004 May Swiss Report Swiss
Research Foundation on Mobile Communications Annual Report 2003 2004
June British Medical Association Mobile phones & health - an update 2004
September View of the Nordic Countries A common view on Mobile Telephony
and Health developed by the competent authorities in Denmark, Finland,
Iceland, Norway and Sweden 2004 December Review by ICNIRP Standing
Committee on Epidemiology A comprehensive review of the epidemiology of
health effects of radiofrequency exposure 2004 December Swedish
Report Swedish Radiation Protection Authority (SSI) Second annual report from
SSI's Independent Expert Group on Electromagnetic Fields 2005 January NRPB
Report W65A Summary of Recent reports on Mobile Phones and Health
(2000-2004) 2005 January NRPB Report Documents of the NRPB - Mobile
Phones and Health Volume 15 No.5 2004 2005 January US Food & Drugs
Administration (FDA) .2005 January British Medical Association Mobile Phones
and Health - An update 2005 May French Agency for Environmental Health
Safety Opinion on Mobile Telephony 2005 November Dutch Report Health
Council of the Netherlands Electromagnetic Fields Annual Update 2005 2005
December WHO leaflet Electromagnetic Fields and Public Health -
Electromagnetic Hypersensitivity 2005 December Swedish Report Swedish
Radiation Protection Authority (SSI) Third annual report from SSI's Independent
Expert Group on Electromagnetic Fields, ... , EMF Net 2003-2008

Peter Wiedemann

ible risk assessors



World Health Organization

عربي | 中文 | English | Français | Русский | Español

Search

All WHO This site only

Home	Electromagnetic fields (EMF)	
About WHO	About us Publications Contact us	
Countries	WHO > Programmes and projects > Electromagnetic fields (EMF)	Participating countries & entities in EMF Project
Health topics		
Publications		
Data and statistics		
Programmes and projects		
EMF Home		WHAT'S NEW!
About electromagnetic fields	The International EMF Project	2010 WHO Research Agenda for Radiofrequency Fields has been published Click here for more information
EMF Project	The Project is to assess health and environmental effects of exposure to static and time varying electric and magnetic fields in the frequency range 0-300 GHz.	Electromagnetic fields and public health: mobile phones May 2010 Full text
Research		QUICK LINKS IN THE EMF SITE
Standards	<ul style="list-style-type: none">What is the International EMF ProjectOrganization structure of the projectInternational EMF Project staff	Model Legislation More information
EMF publications & information resources	 EMF Project Promotional Brochure [pdf 3.06Mb]	Fact Sheets and Information Sheets Full text
Meetings	Project participants	The EMF Standards World Wide Database Click here
	<ul style="list-style-type: none">Participating countriesInternational organizationsWHO collaborating institutions	

Peter Wiedemann

the entire picture

Sign Up Credits Contact Deuts

powered by femu Site Search: in glossary Not I

EMF-PORTAL

Information on the Effects of Electromagnetic Fields

- Publication Query
- Glossary
- Exposure Sources
- Basics

New Extractions

11.11.08: Extremely low frequency magnetic fields cause oxidative DNA damage in rats.
Yokus B, Akdag MZ, Dasdag S, Cakir DU, Kizil M in: Int J Radiat Biol 2008; 84 (10): 789 - 795

06.11.08: Can evidence change belief? Reported mobile phone sensitivity following individual feedback of an inability to discriminate active from sham signals.
Nieto-Hernandez R, Rubin GJ, Cleare AJ, Weinman JA, Wessely S in: J Psychosom Res 2008; 65 (5): 453 - 460

05.11.08: Microwaves from UMTS/GSM mobile phones induce long-lasting inhibition of 53BP1/gamma-H2AX DNA repair foci in human lymphocytes.
Belyaev IY, Markova E, Hillert L, Malmgren LO, Persson BR in: Bioelectromagnetics 2008

05.11.08: Blood-brain barrier permeability and nerve cell damage in rat brain 14 and 28 days after exposure to microwaves from GSM mobile phones.
Eberhardt JL, Persson BR, Brun AE, Salford LG, Malmgren LO in: Electromagn Biol Med 2008; 27 (3): 215 - 229

New Publications

12.11.2008: Proportion-corrected scaled voxel models for Japanese children and their application to the numerical dosimetry of specific absorption rate for frequencies from 30 MHz to 3 GHz.
Nagaoka T, Kunieda E, Watanabe S in: Phys Med Biol 2008; 53 (23): 6695 - 6711

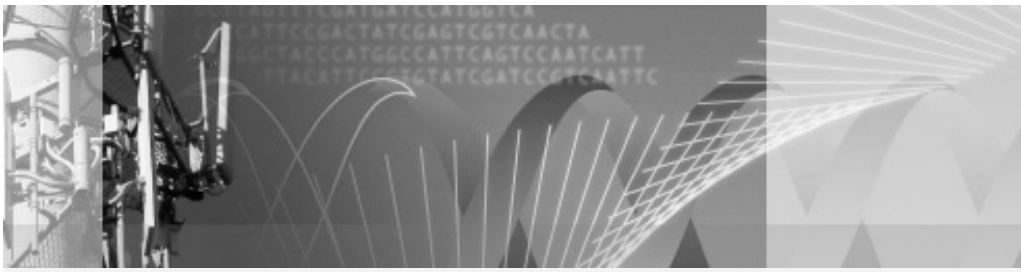
10.11.2008: Residence Near Power Lines and Mortality From Neurodegenerative Diseases: Longitudinal Study of the Swiss Population.
Huss A, Spoerri A, Egger M, Rösli M in: Am J Epidemiol 2008: in press

10.11.2008: Use of wireless telephones and serum S100B levels: A descriptive cross-sectional study among healthy Swedish adults aged 18-65 years.
Soderqvist F, Carlberg M, Hardell L in: Sci Total Environ 2008: in press

10.11.2008: Exposure to mobile telecommunication networks assessed using personal dosimetry and well-being in children and adolescents: the German MobilEe-study.
Thomas S, Kuhnlein A, Heinrich S, Praml G, von Kries R, Radon K in: Environ Health 2008; 7 (1): in press

06.11.2008: Extremely low frequency magnetic fields cause oxidative DNA damage in rats.

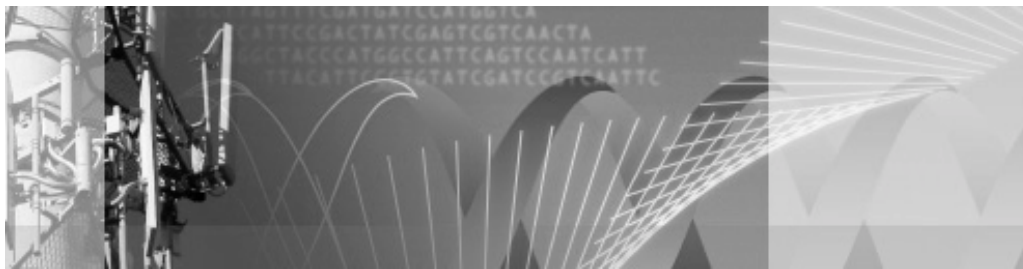
Home Objectives
Publication Query Standard Query Detailed Query Topics
Glossary
Exposure Sources
Basics
Links
Current status: 12197 collected publications. (as of 16. Nov 2008)



Policy

- Using the right science in a right way to improve risk assessment
- **Applying the right risk management framework**
- Tailoring the right messages
- Putting the right people at right places to get your messages across

Peter Wiedemann



FRAMEWORK FOR DEVELOPING HEALTH-BASED EMF STANDARDS



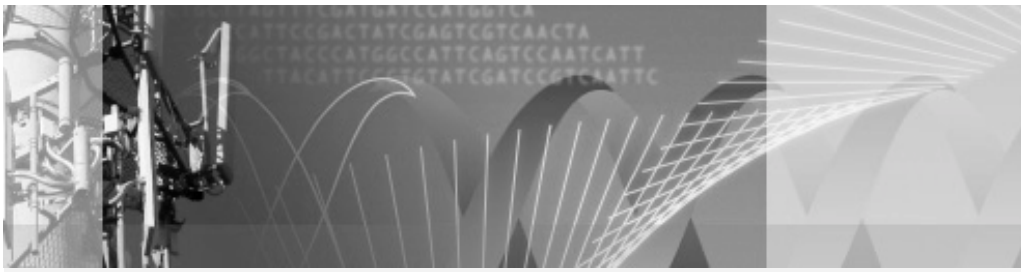
Procedure



Considerations

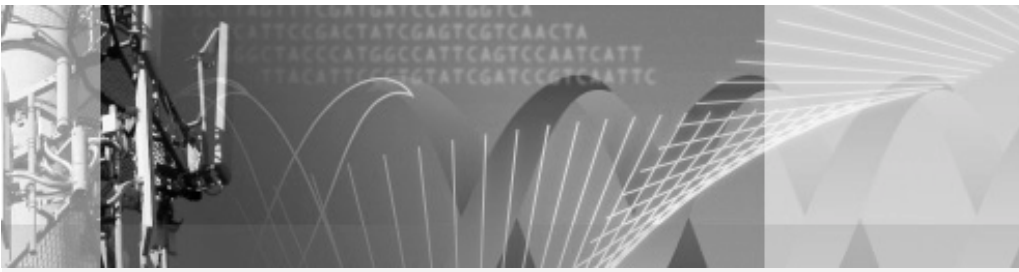
Section	Considerations
Section 3	<ul style="list-style-type: none"> > Types of studies > Criteria for inclusion
	<ul style="list-style-type: none"> > Hierarchy of studies > Criteria for evaluation > Weight-of-evidence
Section 4	<ul style="list-style-type: none"> > Interpretation of threshold > Biological effects > Interaction mechanisms
	<ul style="list-style-type: none"> > Multiple tiers/different populations > Level of scientific uncertainty
	<ul style="list-style-type: none"> > Basic restrictions > Reference levels > Frequency extrapolation
Section 5	<ul style="list-style-type: none"> > Explanatory supporting document > Compliance measures > Monitoring system

Peter Wiedemann



Policy

- Using the right science in a right way to improve risk assessment
- Applying the right risk management framework
- **Tailoring the right messages**
- Putting the right people at right places to get your messages across



- “ 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 no longer appropriate to rely on hunches and intuitions regarding the details of message formulation. ”

Morgan & Lave, 1990, 358



EMF RISK PERCEPTION

WHY STUDY RISK PERCEPTION?

RISK PERCEPTION research aims

- (i) to discover what people mean when they say that something is (or is not) “risky,” and to determine what factors underlie those perceptions,
- (ii) to develop a theory of risk perception that predicts how people will respond to new hazards and management strategies,
- (iii) to develop techniques for assessing the complex and subtle opinions that people have about risk.

EMF POPULATION SURVEY

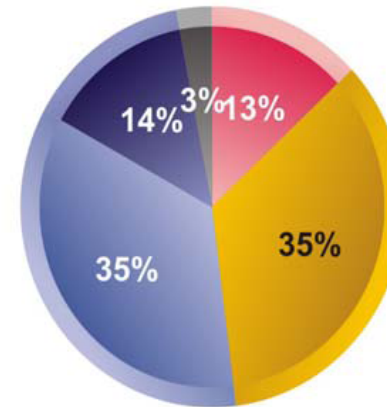
POPULATION SURVEYS

- shows public opinion on certain issues often across countries

SURVEY INPUT:

- general quantitative overview over reported EMF risk perception
- representative data

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

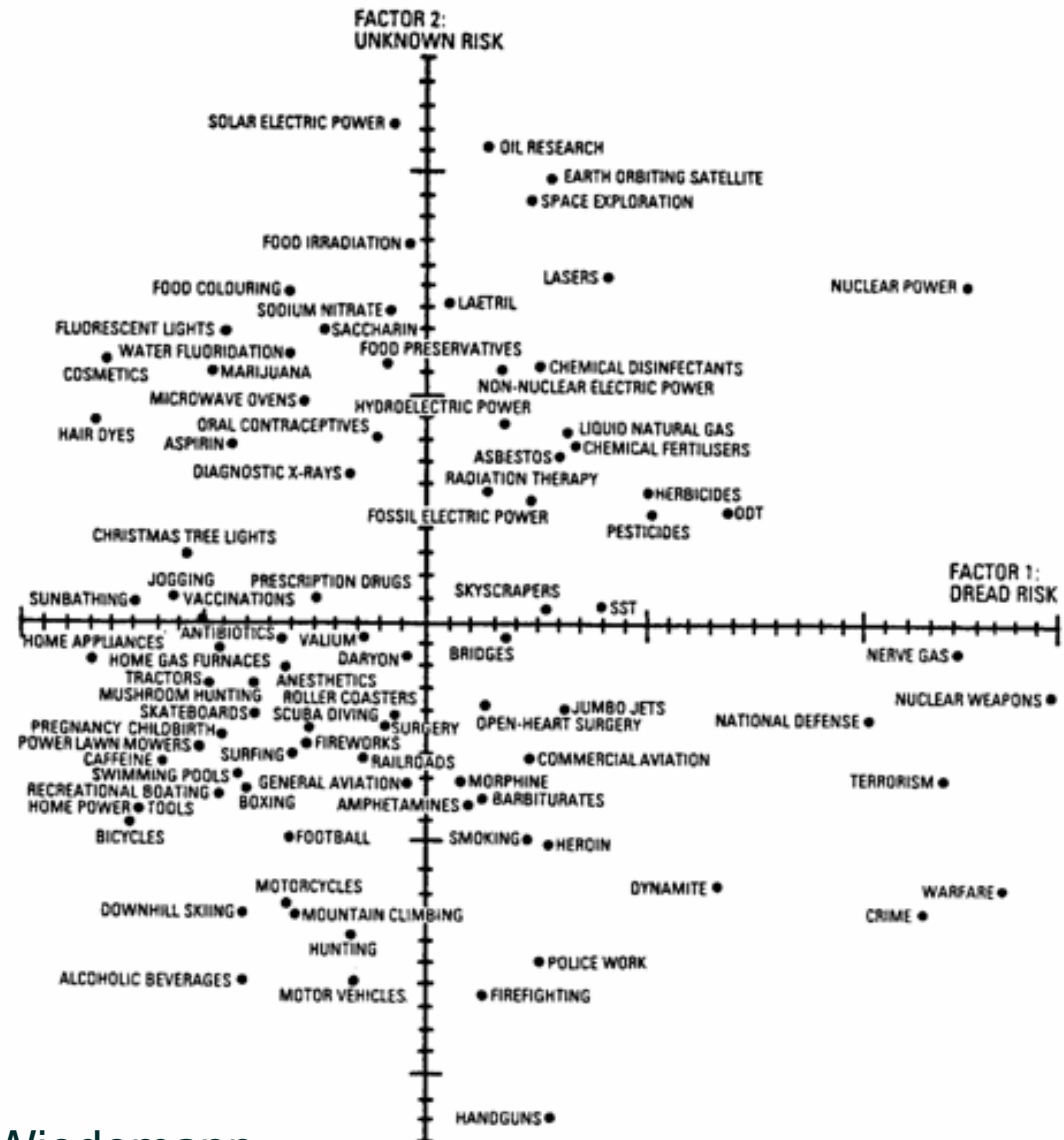


Source: Special Eurobarometer 2006

PSYCHOMETRIC PARADIGM

PSYCHOMETRIC INPUT

- more in-depth
- qualitative factors can be identified
- highlights variances between different technologies



Peter Wiedemann

PSYCHOMETRIC PARADIGM

LIMITATIONS:

- limited explanatory power within one technology
- correlation studies do not allow causal conclusions

Table VIII. Beliefs About Potential Sources of Interference with Normal Operation of Nervous System

	Moderate or strong interference (%)				Control group	Pretest effect*
	1990 study		1993 replication			
	Pretest	Posttest	Pretest	Posttest		
Microwave oven	10.2	20.3	14.3	32.9*	31.4**	n.s.
Marijuana	71.2	71.2	88.6	82.9	90.0	n.s.
Street drugs	96.6	94.9*	98.6	98.6	98.6	n.s.
Television signals	32.2	28.8	10.0	27.1***	28.6*	n.s.
Diet	78.0	72.9	64.3	64.3	80.0	n.s.
Noise	76.3	67.8	41.4	44.3	45.7	n.s.
Stress	93.2	93.2	84.3	81.4	90.0	n.s.
Smoking	84.8	91.5	91.4	90.0	95.7	n.s.
Electromagnetic fields	44.1	62.7*	35.7	55.7***	42.9	n.s.
Children	42.4	39.0	34.3	35.7	32.9	n.s.
Alcohol	98.3	98.3	91.4	88.6	97.1	n.s.
X-Rays	40.7	61.0**	35.7	64.3***	65.7***	n.s.
Pesticides	64.4	74.6	54.3	67.1*	64.3***	•
High-voltage transmission lines	55.9	62.7	42.9	62.9**	57.1*	n.s.
Electricity distribution lines	32.2	49.2**	32.9	51.4***	47.1**	n.s.
Electric blankets	17.0	44.1***	11.4	47.1***	27.1**	•
Hair dryers	5.1	25.4***	4.3	38.6***	15.7**	**

* Significance test comparing the control group with the 1993 posttest group (see Fig. 1).

Source: MacGregor D, Slovic P, Granger Morgan M. Perception of Risks From Electromagnetic Fields: A Psychometric Evaluation of a Risk-Communication Approach. *RiskAnalysis*, Vol. 14, No. 5, 1994



EMF EXPERIMENTAL STUDIES

EXPERIMENTAL STUDIES

- concerned with employing empirical principles and procedures to study psychological phenomena
- in controlled conditions
- test in order to discover an unknown effect or law, to examine or establish a hypothesis, or to illustrate a known law



EMF EXPERIMENTAL STUDIES

EXPERIMENTAL INPUT:

- hypothesis driven
- identifies causal factors/ relationships

LIMITATIONS:

- external validity – limited generalizability of results



SOCIAL/EMOTIONAL CONTEXT

THE INFLUENCE OF SOCIAL CONTEXT FACTORS - EMOTIONS

- Lay People approach risk questions different to experts.
- They perceive risks primarily in a social and relationship context.
- They transfer questions of risks into their every day life framework of routine events.
- This perspective is based on common patterns of interpreting events, which are heavily influenced by media.

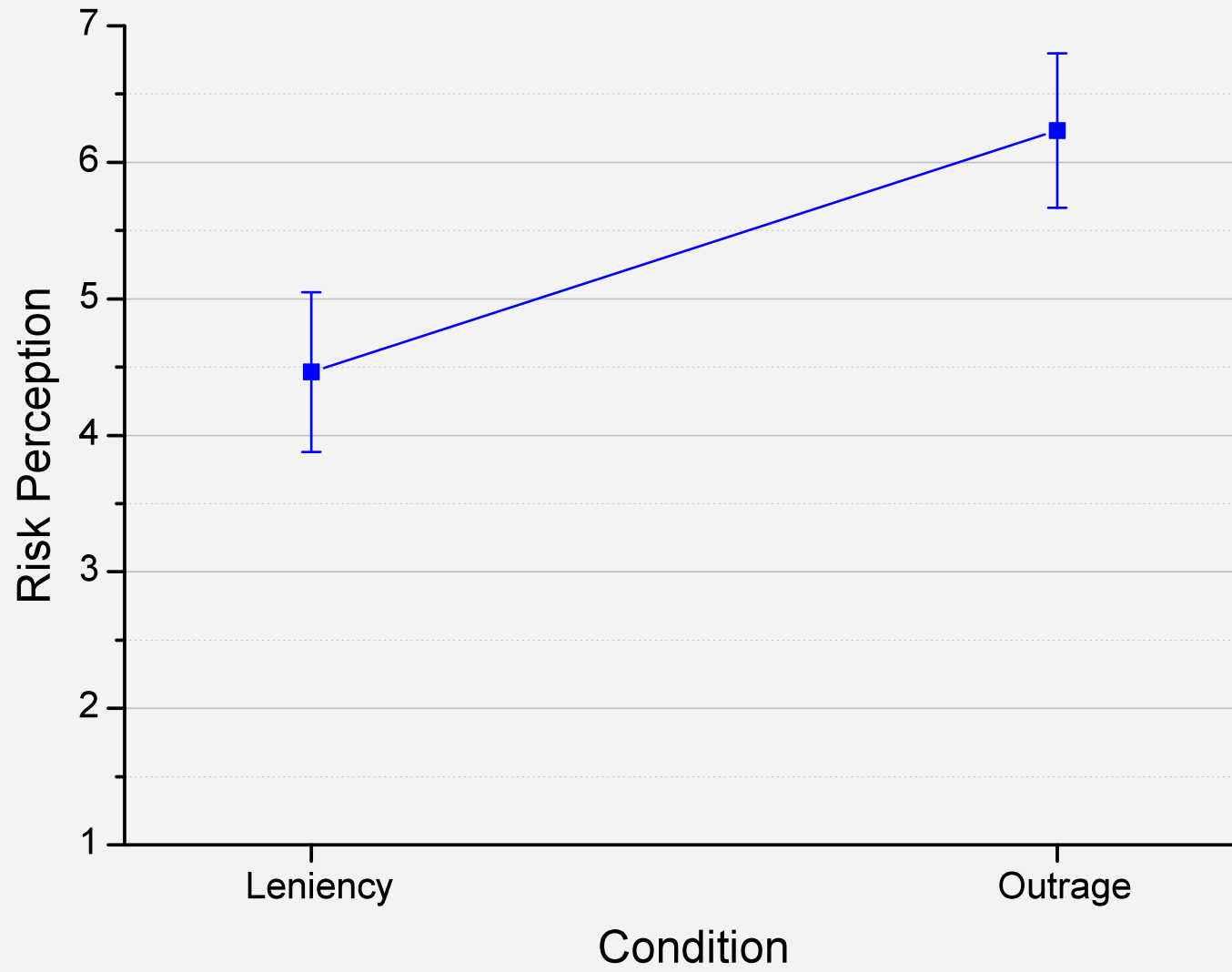
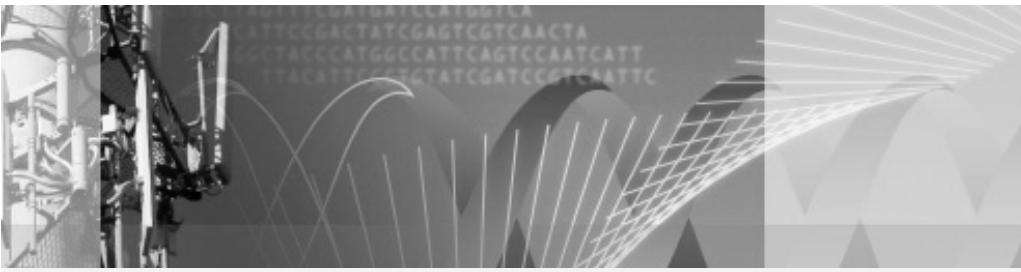


SOCIAL/EMOTIONAL CONTEXT

RISK STORY EXPERIMENT

Aim: Investigate the influence of social context factors/ affective factors which induce outrage vs. leniency on risk perception.

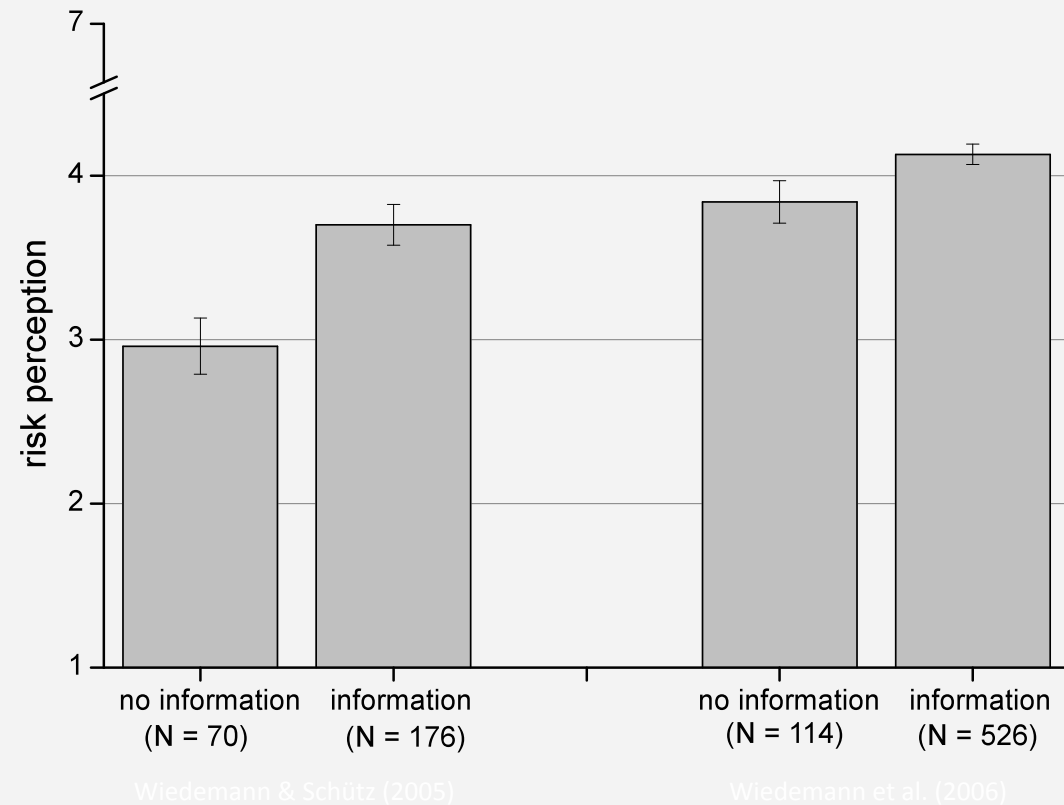
- 1. Step:** Two stories were constructed focusing around the theme “it was bound to happen sooner or later” arousing either outrage or leniency.
Presentation of identical risk information but variation in context: company description, cause of incident, possible motives behind the incident ...
- 2. Step:** Stories were given to people for evaluation
Subjects had to rate the severity (badness) of the risks

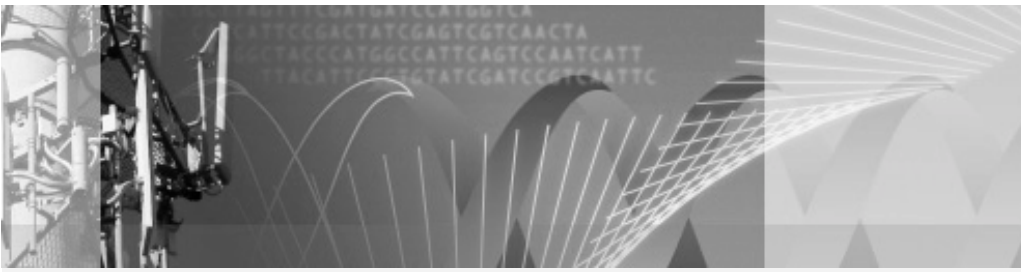


Peter Wiedemann

precautionary measures

- Wiedemann, P. M., & Schütz, H. (2005). The Precautionary Principle and Risk Perception: Experimental Studies in the EMF Area. *Environ Health Perspect*, 113, 402-405.
- Wiedemann, P. M., Thalmann, A. T., Grutsch, M. A., & Schütz, H. (2006). The impacts of precautionary measures and the disclosure of scientific uncertainty on EMF risk perception and trust. *Journal of Risk Research*, 9(4), 361-372.
- Barnett, J., Timotijevic, L., Shepherd, R., & Senior, V. (2007). Public responses to precautionary information from the Department of Health (UK) about possible health risks from mobile phones. *Health Policy*, 82(2), 240-250.

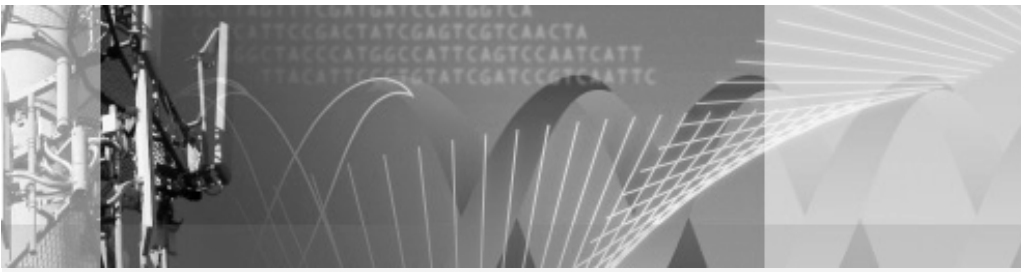




Be aware of side effects of your communication



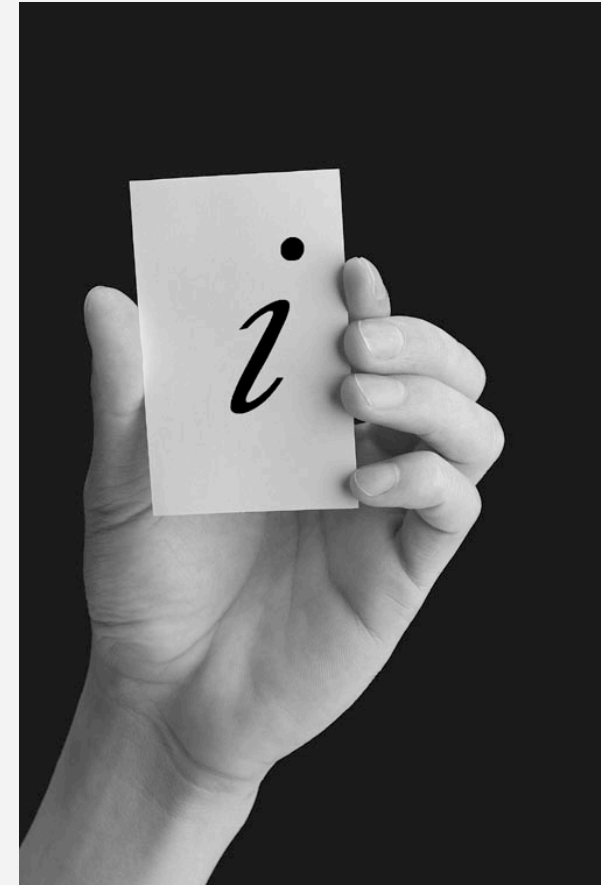
Peter Wiedemann

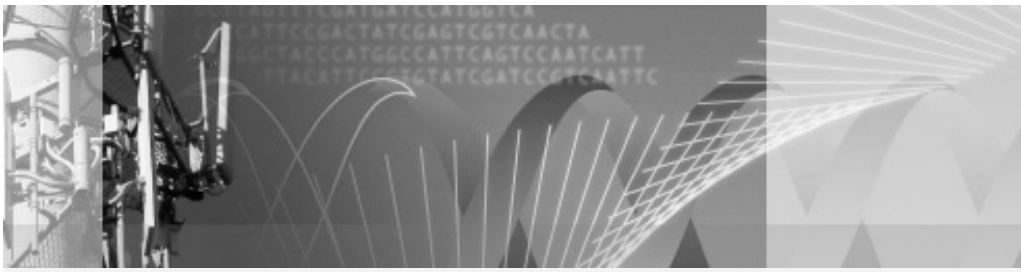


Quality of information

What counts in information policies

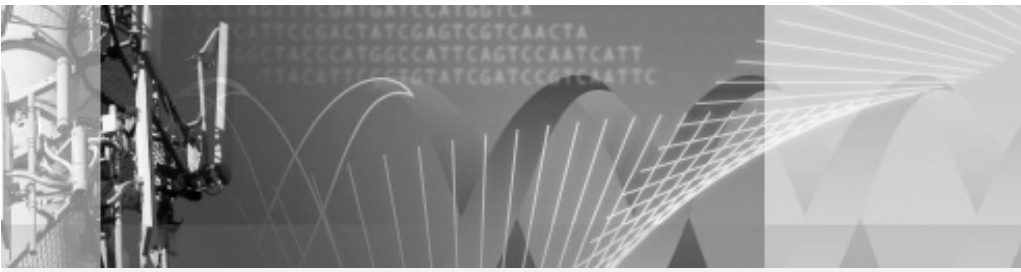
- Impartiality
- Expertise
- Transparency
- Simplicity
- Proactivity





Policy

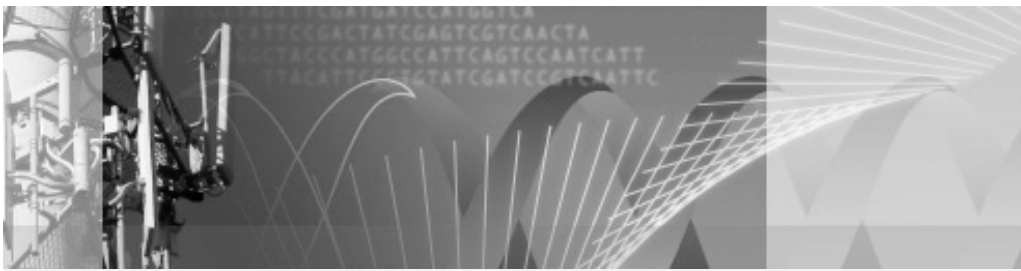
- Using the right science in a right way to improve risk assessment
- Applying the right risk management framework
- Tailoring the right messages
- **Putting the right people at right places to get your messages across**



Develop strong community ties

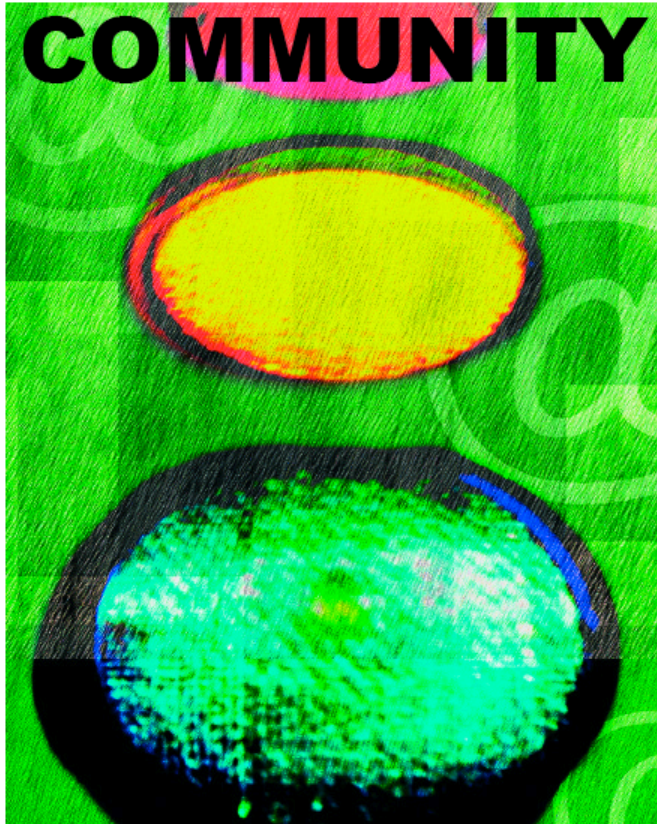


Peter Wiedemann



WORKING WITH THE

COMMUNITY



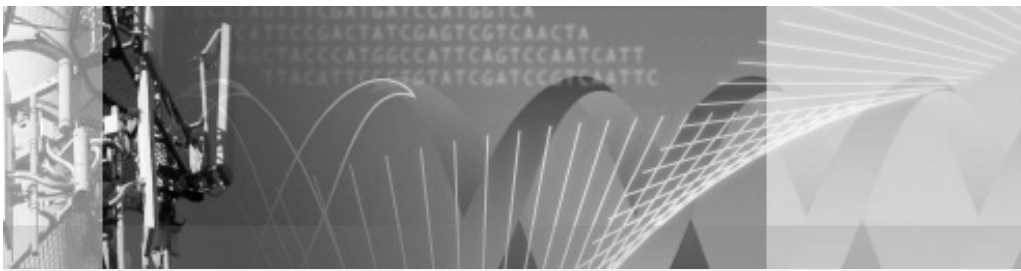
Handbook on mobile telecoms community
consultation for best siting practice

The Ten Commitments

- 1** Develop, with other stakeholders, clear standards and procedures to deliver significantly improved consultation with local communities.
- 2** Participate in obligatory pre-rollout and pre-application consultation with local planning authorities.
- 3** Publish clear, transparent and accountable criteria and cross-industry agreement on site sharing, against which progress will be published regularly.
- 4** Establish professional development workshops on technological developments within telecommunications for local authority officers and elected members.
- 5** Deliver, with the government, a database of information available to the public on radio base stations.
- 6** Assess all radio base stations for international (ICNIRP*) compliance for public exposure, and produce a programme for ICNIRP compliance for all radio base stations as recommended by the Independent Expert Group on Mobile Phones.
- 7** Provide, as part of planning applications for radio base stations, a certification of compliance with ICNIRP public exposure guidelines.
- 8** Provide specific staff resources to respond to complaints and enquiries about radio base stations, within ten working days.
- 9** Begin financially supporting the government's independent scientific research programme on mobile communications health issues.
- 10** Develop standard supporting documentation for all planning submissions whether full planning or Prior Approval.

Peter Wiedemann

NOTE: * International Commission on Non-Ionising Radiation Protection



Peter Wiedemann

The Ten Commitments

- 1** Develop, with other stakeholders, clear standards and procedures to deliver significantly improved consultation with local communities.
- 2** Participate in obligatory pre-rollout and pre-application consultation with local planning authorities.
- 3** Publish clear, transparent and accountable criteria and cross-industry agreement on site sharing, against which progress will be published regularly.
- 4** Establish professional development workshops on technological developments within telecommunications for local authority officers and elected members.
- 5** Deliver, with the government, a database of information available to the public on radio base stations.
- 6** Assess all radio base stations for international (ICNIRP*) compliance for public exposure, and produce a programme for ICNIRP compliance for all radio base stations as recommended by the Independent Expert Group on Mobile Phones.
- 7** Provide, as part of planning applications for radio base stations, a certification of compliance with ICNIRP public exposure guidelines.
- 8** Provide specific staff resources to respond to complaints and enquiries about radio base stations, within ten working days.
- 9** Begin financially supporting the government's independent scientific research programme on mobile communications health issues.
- 10** Develop standard supporting documentation for all planning submissions whether full planning or Prior Approval.

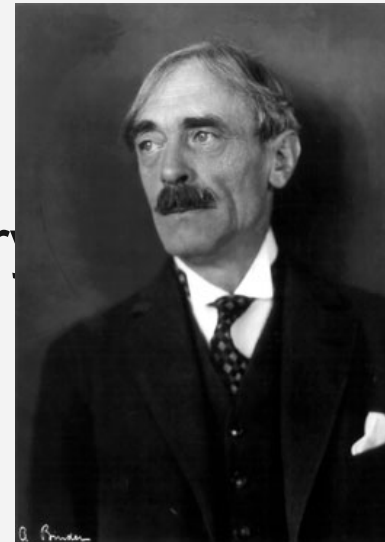
NOTE: * International Commission on Non-Ionising Radiation Protection



message

“What is simple is wrong,
what is complex is useless.”

Paul Valéry



Peter Wiedemann