

Workshop

“Radiofrequency Fields and Health - Conclusions after 17 years work of the FGF

Special Topic: Radiofrequency Electromagnetic Fields
and Brain Physiology – What is the Connection? ”



Organized by



FGF E.V.



**STATE MINISTRY OF ENVIRONMENT,
BADEN-WÜRTTEMBERG**

Program

The Research Association for Radio Applications (Forschungsgemeinschaft Funk e. V., FGF) will cease to exist on December 31st, 2009. This event will be used as an opportunity to summarize not only the work of FGF but also that of the whole scientific community in the field of biological and health effects of radiofrequency electromagnetic fields (RF-EMF). For this purpose representatives from different administrative and scientific bodies will present and discuss their assessment of the state of scientific research and necessary actions for the future.

Before these conclusions are drawn the workshop will be dedicated to the question whether RF-EMF used – for instance – for mobile communication can have effects on brain functions (e.g. the EEG, sleep patterns, and cognitive tasks). It will be a follow-up of a workshop in 2007 arranged by the same organizers (“Sleep Disorders, EEG-Changes, Altered Cognitive Functions – Is There a Connection with the Exposure to Mobile Communication RF Fields?”; see: http://www.fgf.de/english/research_projects/ws16.html) where the latest state of the art in this field of research was summarized. Almost no other research area investigating the exposure of RF-EMF has found such consistent positive results (apart from thermal effects at high exposures). Although these results are rather small biological effects and do not seem to imply any health risk, they stimulate the discussion about possible effects below the safety levels for RF-EMF. Additionally, they motivate the debate on so far unknown demodulation mechanisms, because most of the effects were found only at exposure with low-frequency modulated RF-EMF. On the other side there are also a number of studies which could not find effects, sometimes with the same exposure conditions.

However, research in this area made progress and brought out a lot of significant new results. Recently, the International Commission on Non-Ionizing Radiation Protection (ICNIRP) stated in their review: “There is some evidence of small changes in brain physiology, notably on spontaneous EEG, and somewhat more variable evidence of changes in sleep EEG and regional cerebral blood flow but these may be of limited functional consequence; no changes were seen in cognitive function.”. The Scientific Committee on Emerging and Newly Identified Health Risks of the European Union (SCENIHR) recommended it its “Research needs and methodology to address the remaining knowledge gaps on the potential health effects of EMF” among others research on “RF field mechanisms and verification of important but preliminary findings (experiments testing the existence of modulation-specific effects or demodulation of RF signals in biological structures; experimental studies on EEG patterns and sleep)”.

The first two days of this workshop are meant to bring together representatives of the working groups which recently have worked on the topics of RF-EMF influence on brain physiology, including effects on sleep and cognitive functions as well as related research on mechanisms. The meeting will offer broad space for discussing their results.

As well as the seven workshops before that were organized by FGF together with the Ministry of Environment Baden-Württemberg, this probably last workshop in this sequence will aim to provide a consensus among the scientists regarding the scientific state of the art and recommendations on follow-up experiments.



SCHEDULE

Sunday, November 22th — 19:00 Welcome Buffet in the Tagungshotel

Monday, November 23rd

09:00 Registration, Coffee, Tea
Loading Time for
Presentations

Elena López Martin

13:45 Discussion

10:00 Welcome & Introduction
G. Friedrich and U. Weese

14:00 **Experimental study of the influence of 900 and 1800 MHz simulated mobile phone signals on EEG: Gender effects**

Chrissanthi Hountala

RF-EMF AND THE HEAD - DOSIMETRY

Chair: Kenneth R. Foster

10:20 **Recent Advances in Numerical Modeling and Dosimetry of Children and Pregnant Women**
Niels Kuster, Andreas Christ

14:30 Discussion

10:50 Discussion

14:45 **Influence of electromagnetic fields of the mobile radio system UMTS on the behaviour of humans in different demand situations**

Hannelore Neuschulz

11:05 Session Discussion

RF-EMF AND THE HEAD - HUMAN AND ANIMAL STUDIES

Chair: Heidi Danker-Hopfe

11:30 **The Australian Centre for Radiofrequency Bioeffects Research (ACRBR): Research Program Update**
Rodney Croft

15:15 Discussion

15:30 Coffee & Tea Break

16:00 **Performance measures and cognitive processing in response to acute exposure to RF-EMF emitted by mobile phones**

Riccardo Russo

12:00 Discussion

16:30 Discussion

12:15 Lunch

13:15 **The effects of GSM-modulated 900 MHz radiation on cerebral activity using an experimental picrotoxin-model in rats**

16:45 **Analysis of Bioregulation as Indicator for the Influence of Humans by Electromagnetic Fields**

Leonore Heiland

17:15 Discussion

19:00 Dinner in the Hotel Restaurant

Tuesday, November 24th

RF-EMF AND THE HEAD - HUMAN AND ANIMAL STUDIES (CONTINUED)

Chair: Gyorgy Thuroczy

**09:00 Effects of Pulse-Modulated
RF-EMF on the Human
Brain: Critical Field Parameters
and Site of Interaction**

Peter Achermann

09:30 Discussion

**09:45 RF-EMF and sleep: The Berlin
DMF sleep studies**

Heidi Danker-Hopfe

10:15 Discussion

10:30 Coffee & Tea Break

**11:00 Neurobiological findings in
electrohypersensitive people – results
of a series of transcranial stimulation
and fMRI experiments**

Ulrich Frick

11:30 Discussion

11:45 Session Discussion and Summary

12:45 Lunch

RF-EMF AND THE HEAD - MECHANISMS AND *IN VITRO* STUDIES

Chair: Roland Glaser

**13:45 Do UMTS Electromagnetic
Fields Affect Blood Circulation
of the Human Brain? A Near-Infrared
Imaging Study**

Martin Wolf

14:15 Discussion

**14:30 Electromagnetic Exposition
of neuronal networks *in vitro***

Christiane Thielemann

15:00 Discussion

**15:15 Testing the influence of mobile
phone field exposure on ion currents
through Ca²⁺ channels in mature
inner hair cells of mice**

Stefan Münkner

15:45 Discussion

16:00 Coffee & Tea Break

**16:30 Thermosensor protein GrpE
of the heat shock protein Hsp 70
system as target for electromagnetic
fields**

Jürg Fröhlich

17:00 Discussion

17:15 Session Discussion

19:30 Departure for the Dinner in
the Restaurant „Ratskeller“

**Wednesday, November 19th****RF-EMF AND HEALTH -
CONCLUSIONS OF RESEARCH**

Chair: Jürgen Kiefer

**09:00 17 years of scientific work
by FGF: EMF research, re-
search analysis, science
dialogue**

Frank Gollnick, Wilma Dubois

09:30 Discussion

**09:45 Fifty Years of Research Pro-
grams on Biological Effects
of Microwaves: What have
we learned?**

Kenneth R. Foster

10:15 Discussion

10:30 Coffee & Tea Break

**11:00 Review of exposure tech-
nique and dosimetry from
the 1990s up to now**

Volkert Hansen

11:30 Discussion

**11:45 Overview on the epidemio-
logical research on brain
related outcomes**

Martin Rösli

12:15 Discussion

12:30 Lunch

**13:30 Problems of the design and
analysis of animal experi-
ments on chronic effects of
EMF**

Michael Kundi

14:00 Discussion

**14:15 Risk assessment approach
and overview of SCENIHR
work on health effects of
EMF**

Mats-Olof Mattsson

14:45 Discussion

15:00 Final Discussion and Farewell

ORGANIZING COMMITTEE:

Gudrun Altmann

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