

Workshop

Are RF-fields
able to raise the risk
of cancer?



Organized by

FORSCHUNGSGEMEINSCHAFT FUNK E.V.

COST 281

MINISTERIUM FÜR UMWELT & VERKEHR BADEN-
WÜRTTEMBERG

EMF-NET

Program

PURPOSE OF THE WORKSHOP

Besides the issue of effects from mobile radio technologies on sleep, intellectual activity and general well-being, citizens are mainly interested in the extent to which increasing exposure of humans to electromagnetic fields could enhance the cancer risk.

On the one hand, public concern is about permanent exposure to transmission masts resp. from phone users in the immediate vicinity, on the other hand it is about whether the comparably stronger fields from the phone held to one's head when making own phone calls can cause cancerous diseases in the long run. In the first case, the whole body is exposed; therefore various types of malignant transformations are addressed - in particular, possible induction of child leukemia. In the second case, the focus is on brain tumor development.

The issue of potential cancer induction or promotion linked to radiofrequency fields is not new and has been investigated at least since the military application of strong radio and radar systems

during World War II, especially in the United States. It did not take long to establish that the small-energy quanta of radiofrequency fields, in contrast to those of x-ray and gamma radiation, are not able to break chemical bindings, i.e. to directly induce changes in the genetic apparatus. A direct cancer induction thus is highly improbable. On the other hand, it cannot be excluded that cancer cells induced by chemical influences or ionizing radiation (and also by UV radiation, etc.), do proliferate faster at exposure to radiofrequency fields and subsequently may manifest themselves as cancerous tumor. This is the reason why the issue of potential cancer promotion is the focus of many investigations at present and shall be the subject of this workshop.

WORKSHOP CONCEPT

There are principally three levels of research done on the issue of potential cancer-promoting effects from radiofrequency fields: those of epidemiological surveys, animal experiments, and in vitro investigations done in cell cultures.



Epidemiological research evolves around the questions: Do persons living in the immediate vicinity of transmission masts, or those who frequently use mobile phones, get cancer more often than the average citizen? Have brain tumor patients been more strongly exposed than others, either occupationally, due to where they live, or other conditions?

Thus, epidemiology has a direct relation to humans and their diseases. The problem of epidemiological investigations, however, is the potential underestimation of cancer-promoting side effects, the uncertainty as to actual field exposure and the variability of results due to relatively small case numbers.

While animal experiments do allow well-controlled test conditions, the issue of portability of results remains open, firstly due to physiological differences between test animals and humans, and secondly, because in small animals the whole body is affected, but in humans mainly superficial layers, due to the small penetration depth of mobile radio fields.

The best answers to the question

of possible causes and mechanisms of carcinogenesis of course are given by in vitro experiments in cell cultures. But these tests do not resolve the issue of whether observed reactions are comparable to those of body cells, and whether a potentially observed biological effect in fact allows to draw medically relevant conclusions.

All this shows that a conclusive answer to the question of a potential cancer risk from radiofrequency electromagnetic fields can only be found keeping an overall perspective and considering the results of all three research schools. It is the aim of the workshop to provide this perspective. The results of the numerous events that have taken place lately, dealing with genetic and cell physiological primary reactions to radiofrequency fields, shall be used as a basis and be only summarily presented during this workshop. The focus of the meeting is the discussion of recently performed long-term experiments and the attempt to build a bridge to epidemiology results.

SCHEDULE

(may be subject to on-site changes)

Monday, November 15th

10:00 Welcome by the organizers

INTRODUCTION — GENOTOXICITY & METHODOLOGICAL ASPECTS

Chair: Norbert Leitgeb

10:15 **RF, Genotoxicity and Mutagenesis as Related to Cancer Causation**

Martin L. Meltz

11:15 Discussion

11:30 **Methodological issues in epidemiology**

Hagen Scherb

12:15 Lunch
(EMF-NET WP2.2 meeting)

RF AND CANCER — EPIDEMIOLOGICAL STUDIES

Chair: Jürgen Wahrendorf

Rapporteurs: Maria Feychting/ Gabi Berg/ Eva Böhler

13:45 **Epidemiological studies on high frequency electromagnetic fields and cancer. An overview**
Brigitte Schlehofer

14:15 Discussion

14:30 **Mobile phone use and the risk of acoustic neuroma**

Maria Feychting

15:00 Discussion

15:15 Coffee Break

15:30 **Brain tumours and mobile phone use: an overview of the studies by the Örebro group**

Kjell Hansson Mild

16:00 Discussion

16:15 **The Naila Study – GSM-Base Stations and Cancer Incidence
An investigation over a period of ten years**

Horst Eger

16:45 Discussion

17:00 Coffee Break

18:30 Social Event
(see details on page 8)



Tuesday, November 16th

Chair: Jürgen Kiefer

Rapporteurs: Maria Feychting/ Gabi Berg/ Eva Böhler

09:00 Discussion Epidemiology

INTRODUCTION — CANCER AND RISK FACTORS

Chair: Jürgen Kiefer

10:00 Cancer-Risk Factors and Primary Prevention

Peter Wust

10:30 Discussion

10:45 Coffee Break

RF AND CANCER — LONG-TERM IN VIVO STUDIES

Chair: Gyorgy Thuroczy

Rapporteur: Jochen Buschmann

11:15 Overview of Long-Term in vivo studies

Alexander Lerchl

12:00 Discussion

12:15 Combined effects of mobile phone radiation with physical carcinogens

Päivi Heikkinen

12:45 Discussion

13:00 Lunch

14:30 Long term exposure of Eμ-Pim 1 transgenic mice to mobile telephone-like radiofrequency fields does not increase lymphoma incidence

Tim Kuchel

15:00 Discussion

15:15 Evaluation of carcinogenic potential of pulsed 900 MHz elec-

tronic fields on Pim 1 transgenic mice: preliminary results

Germano Oberto

15:45 Discussion

16:00 Coffee Break

16:30 The Effect of Chronic Exposure to 835.62 MHz FDMA or 847.74 MHz CDMA on the Incidence of Spontaneous Tumors in Rats

Mays Swicord

17:00 Discussion

17:15 Co-promotion studies done at the PIOM laboratory using mobile telephony signals

Bernard Veyret

17:45 Discussion

18:30 Social Event
(see details on page 8)



Wednesday, November 17th

Chair: Martin Meltz

Rapporteur: Jochen Buschmann

09:00 Cancer related experimental activities at ENEA lab in the framework of the national governmental funds
Carmela Marino

09:30 Discussion

09:45 Discussion In vivo-studies

10:45 Coffee Break

MECHANISMS

Chair: Roland Glaser

11:15 Involvement of oxygen radicals and radical-derived reactive oxygen species (ROS) in biological signaling
Wulf Dröge

11:45 Discussion

12:15 GENERAL DISCUSSION

Chair: Jürgen Kiefer

13:15 Lunch

Organizing Committee:

COST281 Steering Committee
Gerd Friedrich (FGF)
Roland Glaser (Humboldt-Universität Berlin)
Frank Gollnick (FGF)
Lutz Haberland (Universität Rostock)
Anette Kellendonk (FGF)
Uwe Möbius (FGF)



TRAVEL INFORMATION

Venue: Hotel Scheid GmbH, Talstraße 176, D-69198 Schriesheim
 Tel. +49-(0)6203-605-0, Fax: +49-(0)6203-605-80, www.hotel-scheid.de

In case of need please contact the following persons:

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Frank Gollnick, mobile 0179-7487166

or contact the Drivers:

Andrea Oster: 0173-8609952

Horst Engelmann: 0171-4951107

How to find:

Schriesheim is located direct by the Autobahn A5, exit 35 "Ladenburg - Schriesheim" - about 80km in south of Frankfurt and 8km in north of Heidelberg. You'll find our Hotel within a beautiful valley 2 km away from Downtown - Schriesheim.



SOCIAL EVENTS

Monday, November 15th

Time schedule:

- 18:30** Departure from Hotel Scheid by bus
Journey to Ladenburg:
90 minutes excursion to the 2000 years old historic Roman town incl. a visit to the Carl-Benz-House, the famous engineer and car inventor. Afterwards dinner at the restaurant "Zur Kartoffel" with gastronomic specialties prepared on a hot plate
- 22:30** Return to Hotel Scheid by bus

Tuesday, November 16th

Time schedule:

- 18:30** Departure from Hotel Scheid by bus
Trip to Heidelberg: 90 minutes guided tour of the historic old town of Heidelberg. The dinner will take place at the ancient student tavern "Zum Roten Ochsen"
- 22:30** Return to Hotel Scheid by bus

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