

MOBILE TELEPHONY: HEALTH EFFECTS AND PROTECTION MEASURES

Paolo Vecchia
Past Chairman of ICNIRP

Bogotá, Colombia, 24 April 2013

DATABASE OF SCIENTIFIC PAPERS

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Information on the Effects of Electromagnetic Fields

Home
Objectives
Publications
Search
Topics
Overviews
Glossary
Exposure
Sources
Basics
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Please help us to better
supply your needs!
Which (occupational) group do
you belong to? (Multiple
answers possible)
☐ EMF-related occupation
☐ physician
☐ scientist
☐ politician/official
☐ journalist
☐ jurist
☐ interested citizen
☐ novice in electromagnetism

Current status:
15892 collected
publications.
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08.06.12: Occup
fields and the
Coble JB, Dose
Fine HA, Shan
Linet MS, et al
08.06.12: Expo
Electromagne
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Mohler E, Frei P,
QUALIFEX-team
05.06.12: Reduction of the background
magnetic field inhibits ability of *Drosophila*
melanogaster to survive ionizing radiation.
Portelli LA, Madapatha DR, Martino C, Hernandez M,
Barnes FS (2012), Bioelectromagnetics: in press

Current status:
16160
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publications.
(as of 26. Aug
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08.06.1
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Radhakrishnan R, Leelapriya T, Kumari BD (2012),
Bioelectromagnetics: in press
08.06.12: Electric fields caused by blood flow
modulate vascular endothelial
electrophysiology and nitric oxide

www.emf-portal.de/index.php?l=e

www.emf-portal.de

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REVIEW OF THE LITERATURE

The scientific review must be at the same time:

Comprehensive

No one single study can prove a health effect




Selective

Studies are critically evaluated based on

- Quality
- Replicability
- Consistency

ESTABLISHED EFFECTS FOR RF FIELDS

The only adverse effects that have been clearly observed and understood are acute (immediate)

-  Absorption of electromagnetic energy
-  Increase of body temperature (general or local)
-  Thermal effects

Thermal effects exhibit thresholds that are well above levels that are experienced by the public.

Exposure limits (well below thresholds) totally prevent such effects..

LONG-TERM EFFECTS ?

Concern has been expressed about the possibility that chronic exposures to low-intensity RF fields (i.e. below recommended limits of international guidelines) may increase the risk of long-term pathologies, especially cancer

WHICH BASES FOR THE HYPOTHESIS?

- Limited and contradictory evidence from epidemiology
- Virtually no support from laboratory studies
- No plausible interaction mechanism identified

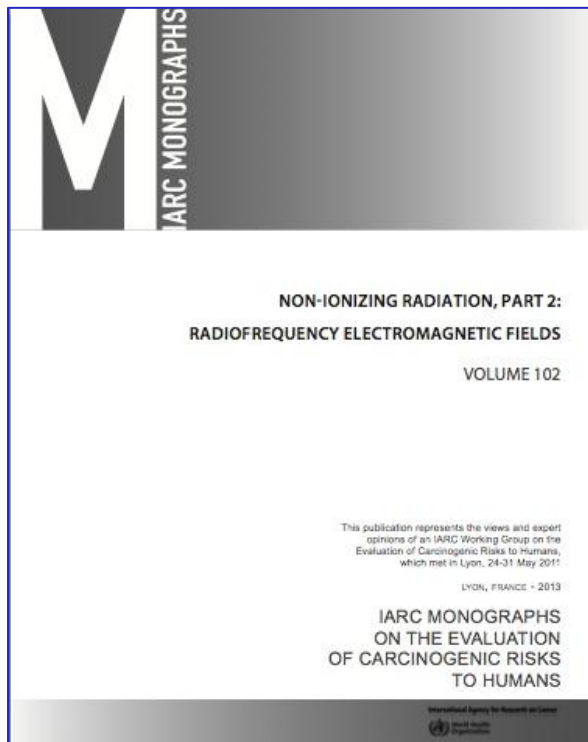
WHO ON LONG-TERM EFFECTS

A scientific review by WHO, held under the International EMF Project, concluded that, from the current scientific literature, there is **no convincing evidence** that exposure to RF shortens the life span of humans, **induces or promotes cancer**

Fact Sheet # 183, May 1998

Bogotá, Colombia, 24 April 2013

THE EVALUATION OF IARC



Radiofrequency electromagnetic fields are possibly carcinogenic in humans (Group 2B)

What does *possibly carcinogenic* mean?

<http://monographs.iarc.fr/ENG/Monographs/vol102/mono102.pdf>

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THE IARC CLASSIFICATION

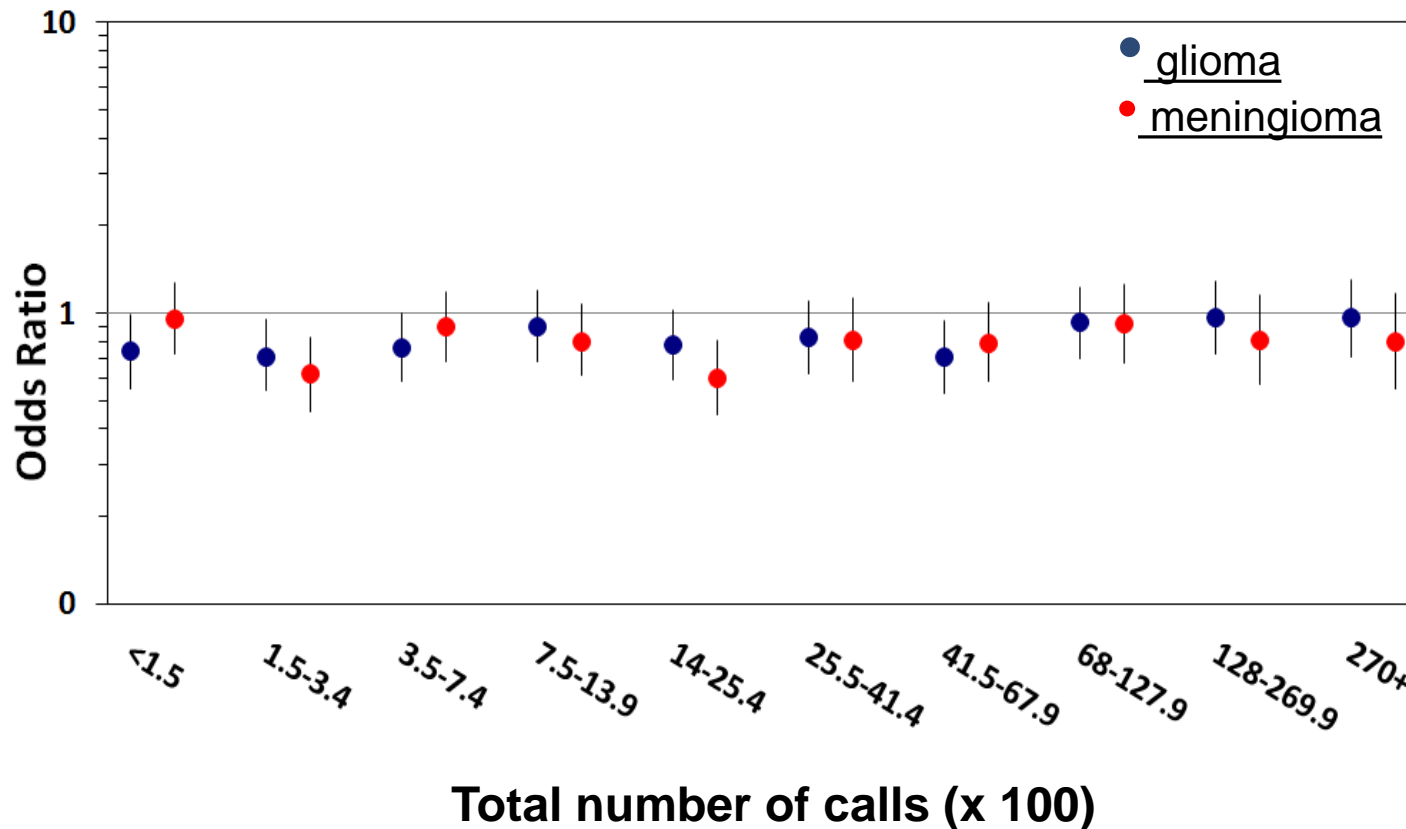
- Group 1: The agent is carcinogenic to humans.
- Group 2A: The agent is probably carcinogenic to humans.
- Group 2B: The agent is possibly carcinogenic to humans
- Group 3: The agent is not classifiable as to its carcinogenicity to humans
- Group 4: The agent is probably not carcinogenic to humans .

What does “possibly carcinogenic” mean?

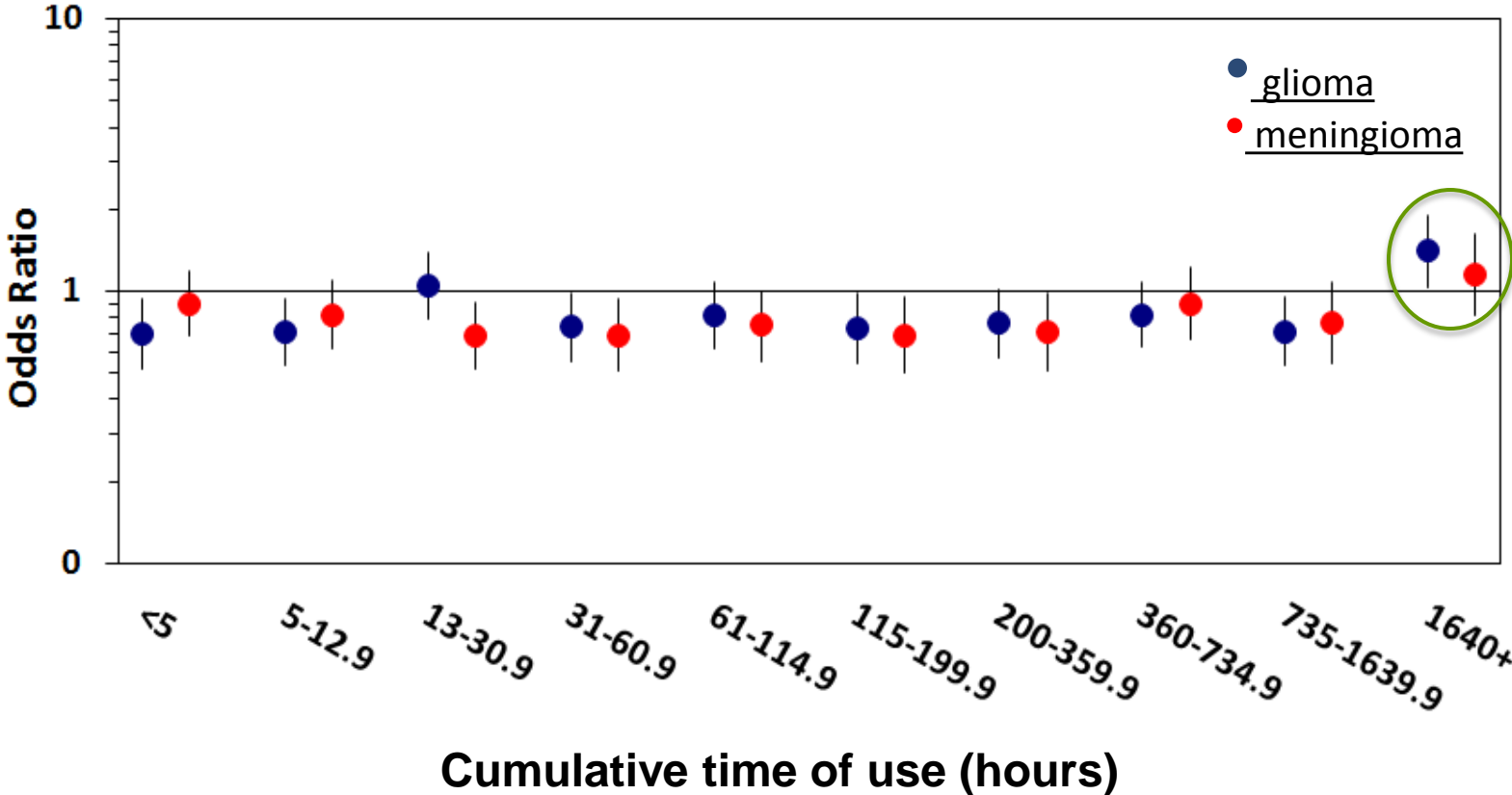
THE INTERPHONE STUDY

- A case-control study independently carried out in 13 countries with a common protocol
- Coordinated by IARC
- Based on self-reported use of mobile phones (questionnaire)
- Data collection completed in 2005
- Findings on brain cancer published in 2010

RESULTS OF THE INTERPHONE STUDY

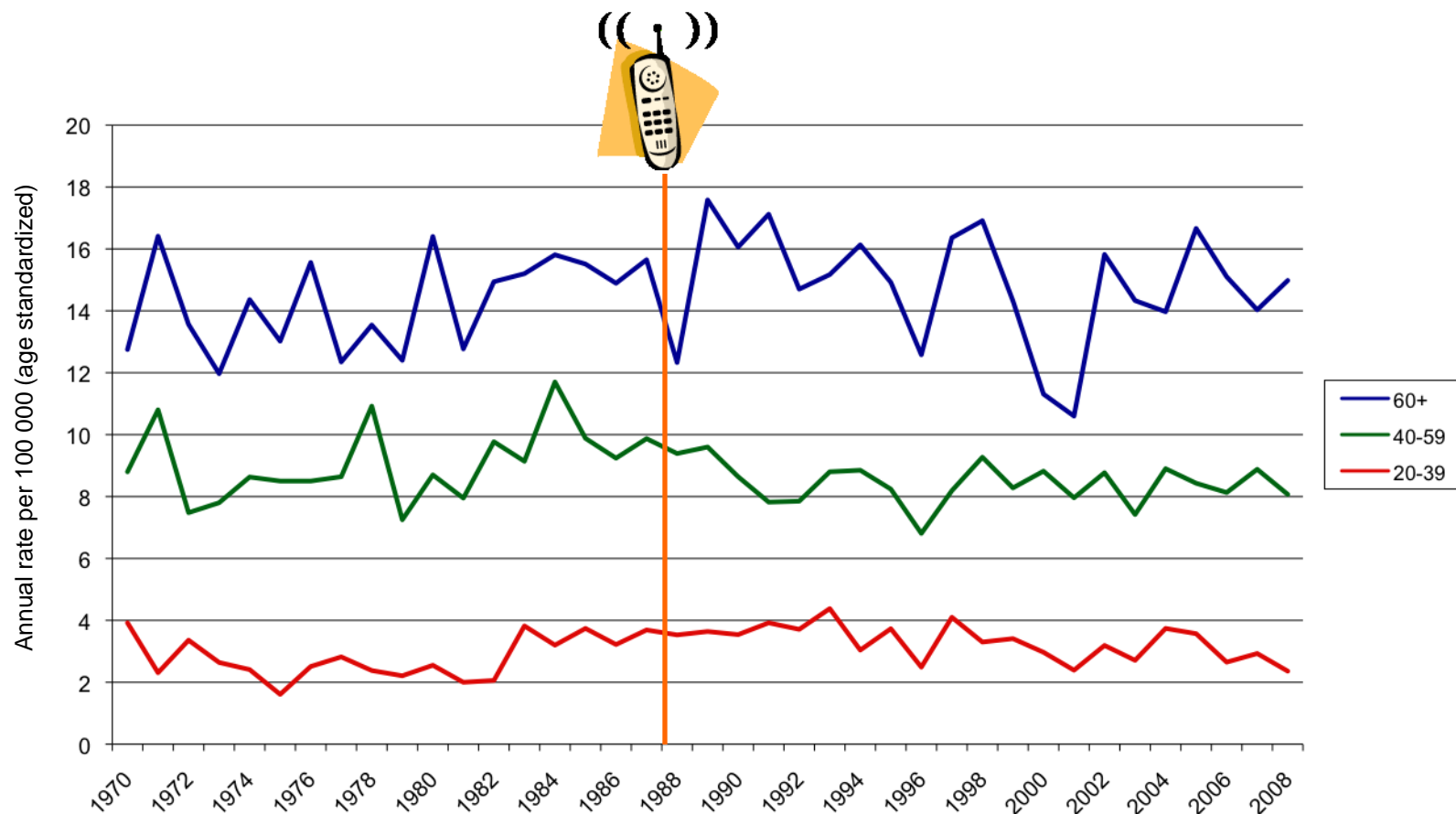


RESULTS OF THE INTERPHONE STUDY



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INCIDENCE OF GLIOMA IN SWEDEN (MEN)

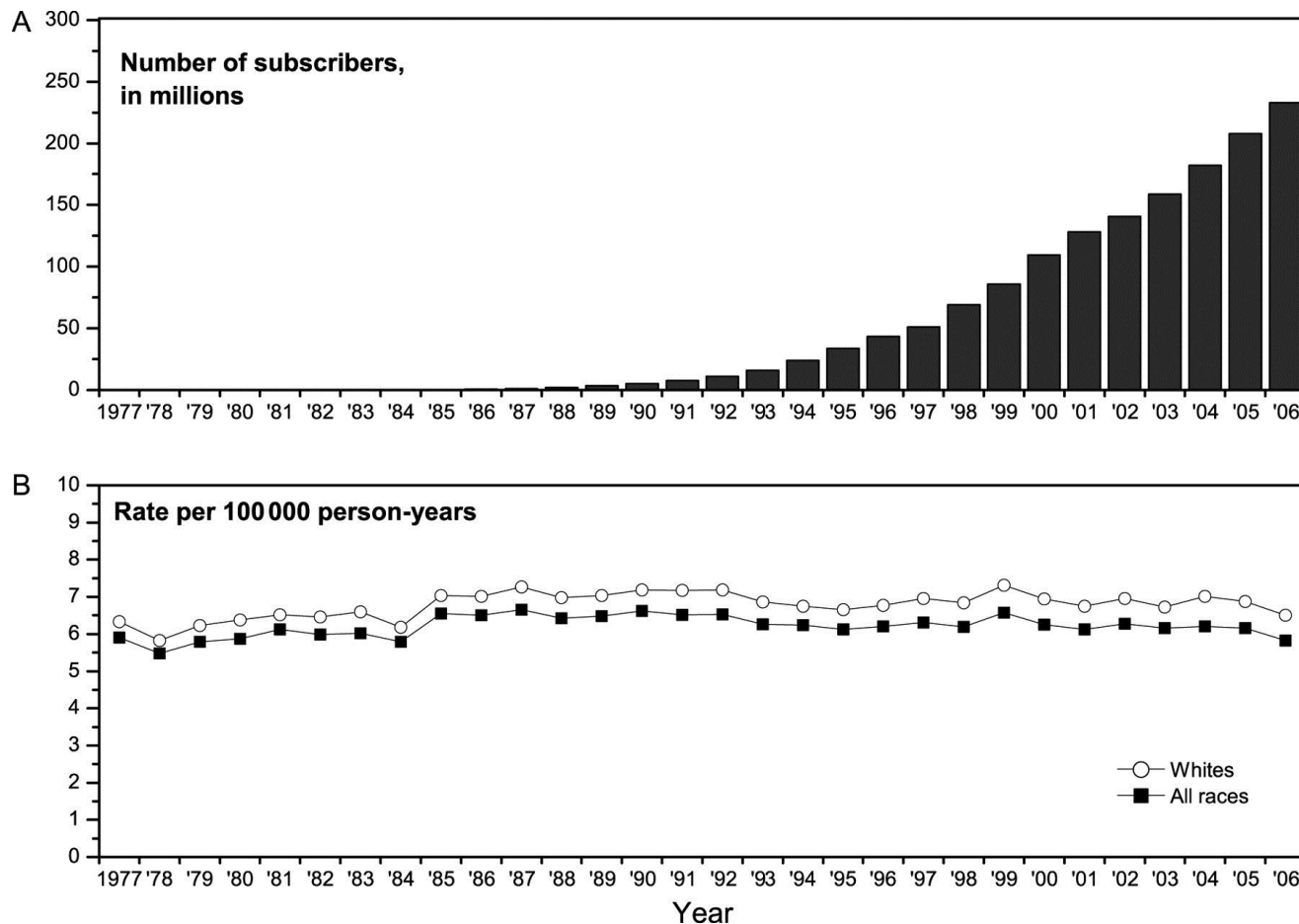


Source: Cancer Register, The National Board of Health and Welfare

Courtesy of Maria Feychting

Bogotá, Colombia, 24 April 2013

MOBILE PHONES AND BRAIN TUMOURS IN USA



Inskip P D et al. Neuro Oncol 2010;12:1147-1151

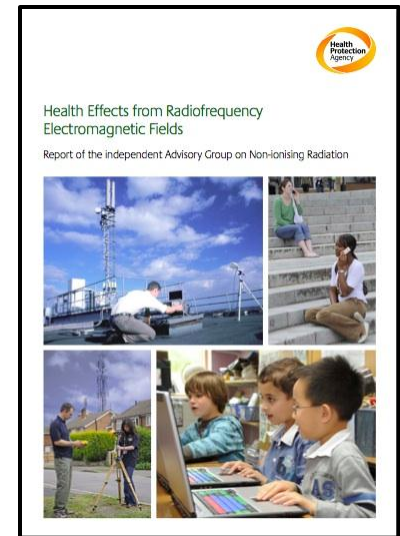
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RECENT EXPERT GROUP REVIEWS (1)

UK Advisory Group on Non Ionizing Radiation
***Health Effects from Radiofrequency
Electromagnetic Fields***
(April 2012)

*“Overall, the evidence of the new studies combined with the previous evidence **does not demonstrate a raised risk** of brain tumours or acoustic neuroma within 15 years of mobile phone use. Data on longer latencies and long-term or heavy use are, however, still limited.”*

http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317133827077



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RECENT EXPERT GROUP REVIEWS (2)

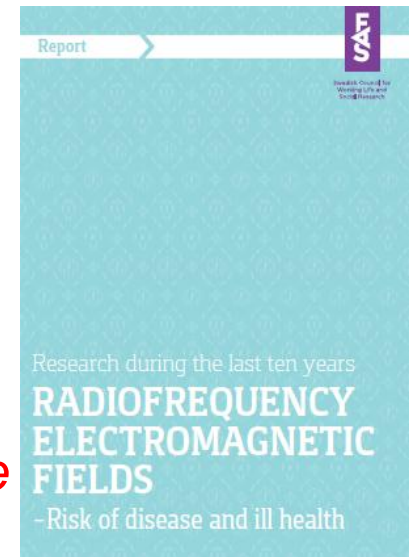
Swedish Council for Working Life and Social Research

Radiofrequency Electromagnetic Fields – Risk of Disease and Ill Health

(June 2012)

“Overall, the data on brain tumor and mobile telephony do not support an effect of mobile phone use on tumor risk, in particular when taken together with national cancer trend statistics throughout the world.”

<http://www.fas.se/pagefiles/5303/10-y-rf-report.pdf>



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RECENT EXPERT GROUP REVIEWS (3)

Norwegian Institute of Public Health

Low-level radiofrequency electromagnetic fields – an assessment of health risks

(September 2012)

*“The large total number of **studies provides no evidence that exposure to weak RF fields causes adverse health effects.** Some measurable biological / physiological effects cannot be ruled out”*

<http://http://www.fhi.no/dokumenter/545eea7147.pdf>

Low-level radiofrequency electromagnetic fields – an assessment of health risks and evaluation of regulatory practice

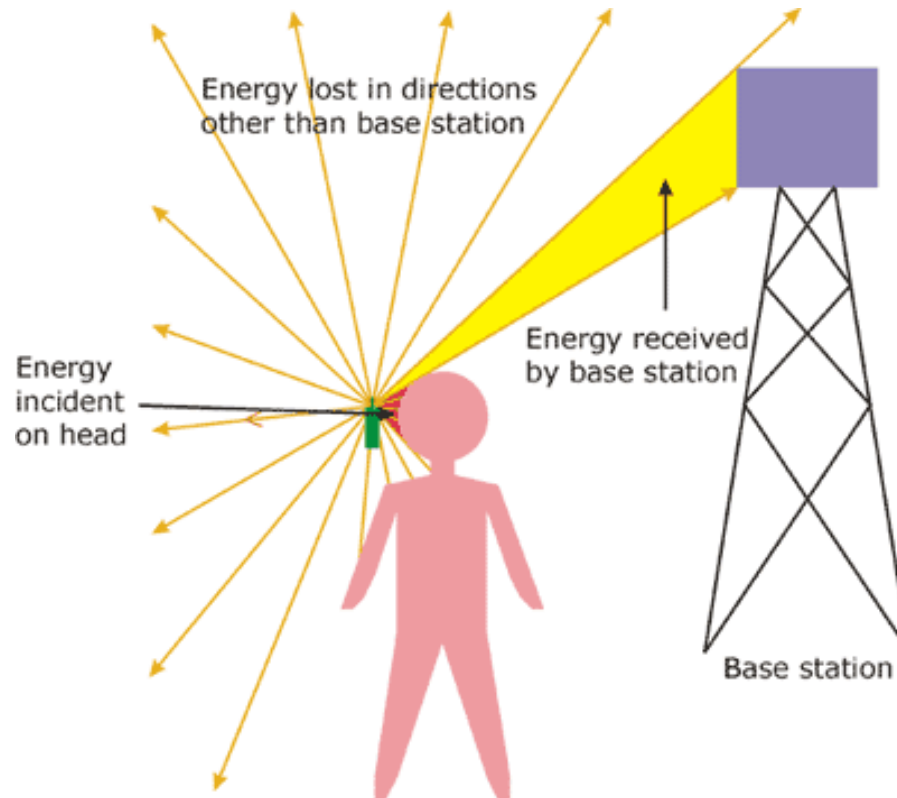


Report from the Expert Committee appointed by the Norwegian Institute of Health, commissioned by the Ministry of Health and Care Services and the Ministry of Transport and Communications

English summary

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BI-DIRECTIONAL EXCHANGE OF ENERGY



Which are the proportions?

OMS - NOTA DESCRIPTIVA N. 304

Una serie de estudios recientes ha puesto de manifiesto que la exposición a RF de las estaciones de base y tecnologías inalámbricas en lugares de acceso público (incluidos hospitales y escuelas) suele ser **miles de veces inferior a los límites** establecidos por las normas internacionales.

[...]

De todos los datos acumulados hasta el momento, **ninguno ha demostrado que las señales de RF producidas por las estaciones de base tengan efectos adversos a corto o largo plazo en la salud.**

<http://www.who.int/mediacentre/factsheets/fs304/es/index.html>

Bogotá, Colombia, 24 April 2013

SWEDEN

To summarize, mobile telecommunications base stations
do not constitute a risk regarding radiation protection.

Radiation from Mobile Telecommunications Base Stations, SSI, 2001

THE NETHERLANDS

The Committee considers the likelihood of health problems arising in work and residential areas near GSM 900 and DCS 1800 base stations due to exposure to electromagnetic fields originating from the antennas, extremely small.

GSM Base Stations, June 2000

FRANCE

Overall, there is **no evidence**, at the date, of **increase in cancer** incidence around high-power emitters and, a fortiori, around base stations

French Senate, 2001

SPAIN

In accordance with previous conclusions, this Board considers that, at current emission strengths, at the distances calculated according to criteria of the EU Recommendation and on the basis of current available scientific evidence, **cell phone antennas do not represent a public health hazard.**

Electromagnetic Fields and Public Health

Bogotá, Colombia, 24 April 2013

AUSTRALIA

No adverse health effects are expected from continuous exposure to radiofrequency radiation emitted by the antennas on mobile telephone base station towers

*Mobile Telephone Communication Antennas: Are They a Health hazard?
Fact Sheet No. 4*

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NEW ZEALAND

Is it safe to live near a cellsite?

Yes. Measurements carried out by NRL around several dozen cellsites have shown that maximum exposures are typically about 1 or 2% of the exposure limit recommended in New Zealand and international exposure standards. In most areas they are less than that. No health effects are anticipated at such low exposures.

www.nrl.moh.govt.nz/faq.html

NORDIC COUNTRIES

(Denmark, Finland, Iceland, Norway, Sweden)

The Nordic authorities agree that there is **no scientific evidence** for any adverse health effects from mobile telecommunication systems, neither from the **base stations** nor from the handsets, below the basic restrictions and reference values recommended by the International Commission on Non-Ionizing Radiation Protection (ICNIRP).

Mobile Telephony and Health: A Common View, 2004

WHY PRECAUTIONARY MEASURES?

- Mitigation of health risks (though hypothetical)?
- Mitigation of public concern?

Measures must be effective for their purpose

WIEDEMANN ET AL. 2005

Possible adverse health effects due to electromagnetic fields (EMFs) from cellular phones and base stations present a major public health issue across Europe. Because scientists cannot exclude that EMFs may cause health problems, the application of the precautionary principle is debated heavily. By considering precautionary measures, political decision makers hope to cope with public fears about EMFs. We present results from two experimental studies that indicate that precautionary measures may trigger concerns, amplify EMF-related risk perceptions, and lower trust in public health protection. Such impacts, questioning common expectations, should be considered in decisions about precautionary measures. *Key words:* base stations, electromagnetic fields, health protection, mobile phones, precautionary principle, risk perception. *Environ Health Perspect* 113:402–405 (2005). doi:10.1289/ehp.7538 available via <http://dx.doi.org/> [Online 10 January 2005]

Health is a state
of complete physical,
mental, and social
well-being and
not merely the
absence of disease
or infirmity.



THANK YOU
FOR YOUR ATTENTION

Bogotá, Colombia, 24 April 2013