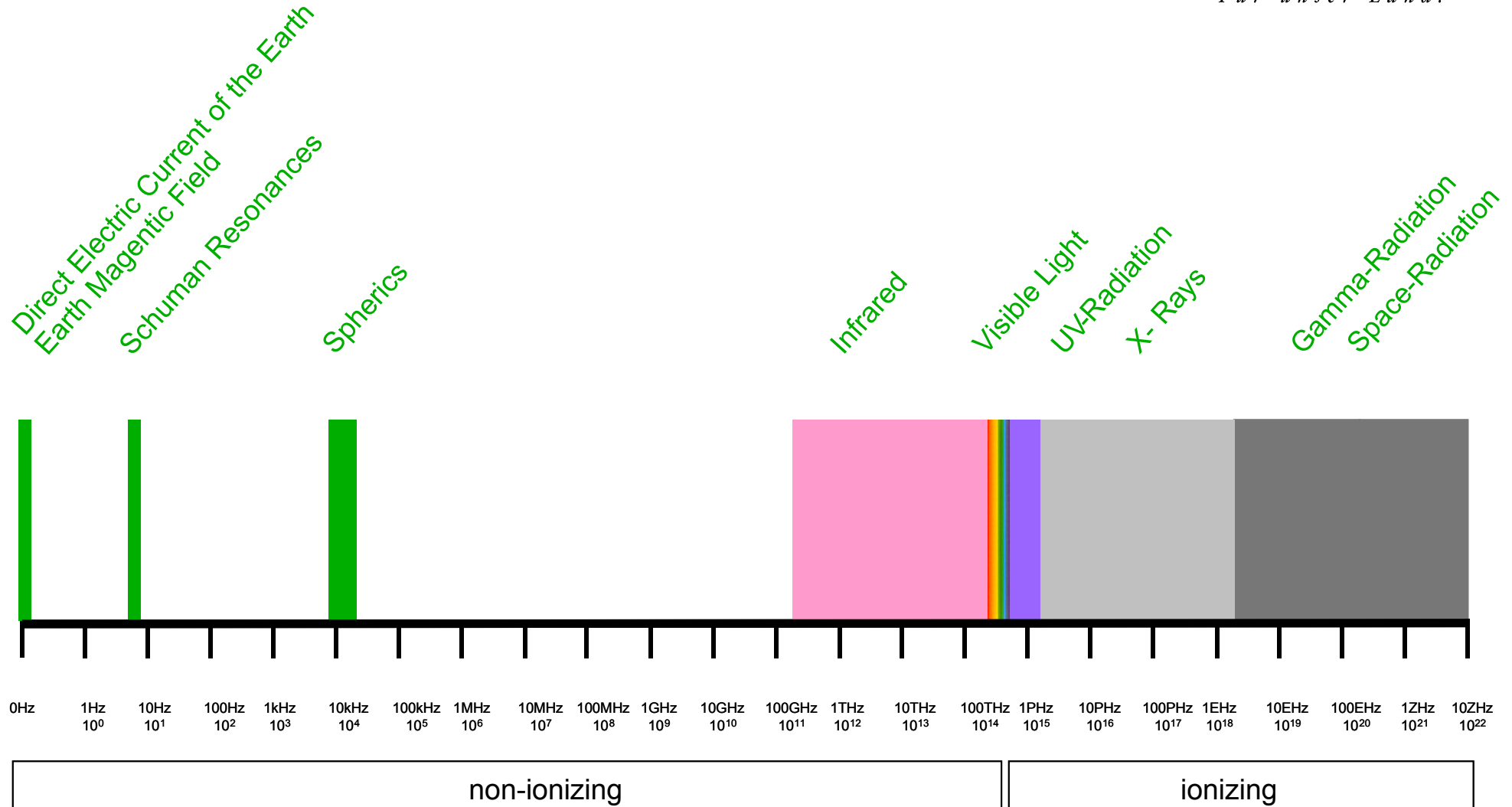


EMF: A Priority For Public Health

**Westminster
London, 19th July 2005**

**Gerd Oberfeld MD
Public Health Department, Government of Salzburg**

Natural Elektromagnetic Spectrum



Catania Resolution

September 13-14, 2002

- ◆ Epidemiological and *in vivo* and *in vitro* experimental evidence demonstrates the existence of electromagnetic field (EMF) induced effects, some of which can be adverse to health.
- ◆ We take exception to arguments suggesting that weak (low intensity) EMF cannot interact with tissue.
- ◆ There are plausible mechanistic explanations for EMF-induced effects which occur below present ICNIRP and IEEE guidelines and exposure recommendations by the EU.
- ◆ The weight of evidence calls for preventive strategies based on the precautionary principle.

Belpoggi, Blackman, Blank, Del Giudice, Giuliani, Grimaldi, Hardell, Kundi, Lai, Liboff, Löscher, Mild, Mosgöller, Richter, Scapagnini, Szmigielski

ELF Magnetic Fields



ELF Magnetic Fields IARC-Risk Assessment 2001

International Agency for Research on Cancer

Lyon, WHO

**Extremely low-frequency magnetic fields are
possibly carcinogenic to humans (Group 2 B)**

ELF Magnetic Fields

California EMF-Program 2002

Health Outcome	Hazard
Leukaemia in Children	possible - definitiv
Leukaemia in Adults	possible - definitiv
Braintumor in Adults	possible
Miscarriage	possible
Motoneuron Disease (MND)	possible
Braintumor in Children, Breast Cancer, Alzheimer´s Disease, Suicide, Sudden Heart Attack	inadequate

Miscarriage in California associated with 60 Hz Magnetic Fields (Peak) [Li 2002]

- ◆ **40 % of all miscarriages associated with magnetic fields >1600 nT**
- ◆ Estimates for Austria
 - ◆ Magnetic fields ⇒ 5800 miscarriages per year
 - ◆ Air pollution ⇒ 5600 premature death per year
 - ◆ Road accidents ⇒ 900 death per year

Microwave Radiation

High Short Term Exposure

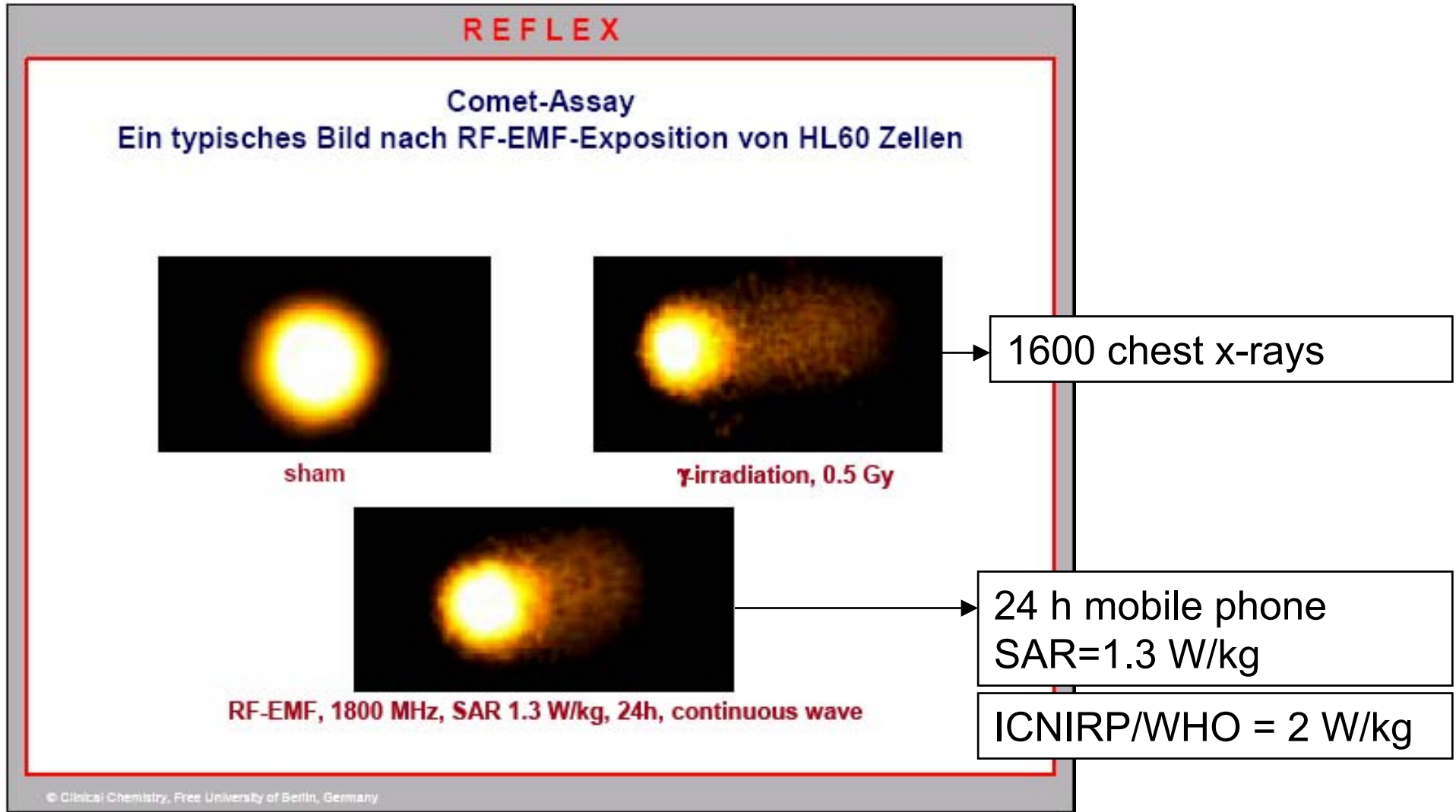
Mobile Phones



Cordless Phones



Chromosome damage mobile phone radiation



Acoustic Neuroma associated with Mobile Phone Use [Hardell 2003]

analogue mobile phones	OR	95%-CI
Both sides use ≥ 10 years	4.4	2.1-9.2

Acoustic Neuroma associated with Mobile Phone Use [Lönn 2004]

analogue / digital mobile phones	OR	95%-CI
Ipsilateral use duration < 5 years	0.8	0.5 – 1.4
Ipsilateral use duration 5 - 9 years	1.4	0.7 – 2.6
Ipsilateral use duration \geq 10 years	3.1	1.2 – 8.4

Microwave Radiation

Less High Long Term Exposure

Mobile Phone Base Stations GSM / UMTS



DECT / WLAN Base Stations



Shortwave Effects [Schliephake 1932]

25. Feb. 1933
Kurzwellentherapie

Die medizinische Anwendung
kurzer elektrischer Wellen

Von

Dr. Erwin Schliephake

Privatdozent für innere Medizin an der Universität Jena

Geleitwort von Prof. Dr. W. H. Veil

Direktor der Medizinischen Univ.-Klinik Jena

Physikalischer Anhang von Dr. L. Rohde, Jena

Assistent am technisch-physikalischen Institut

120 Abbildungen im Text



Verlag von Gustav Fischer in Jena

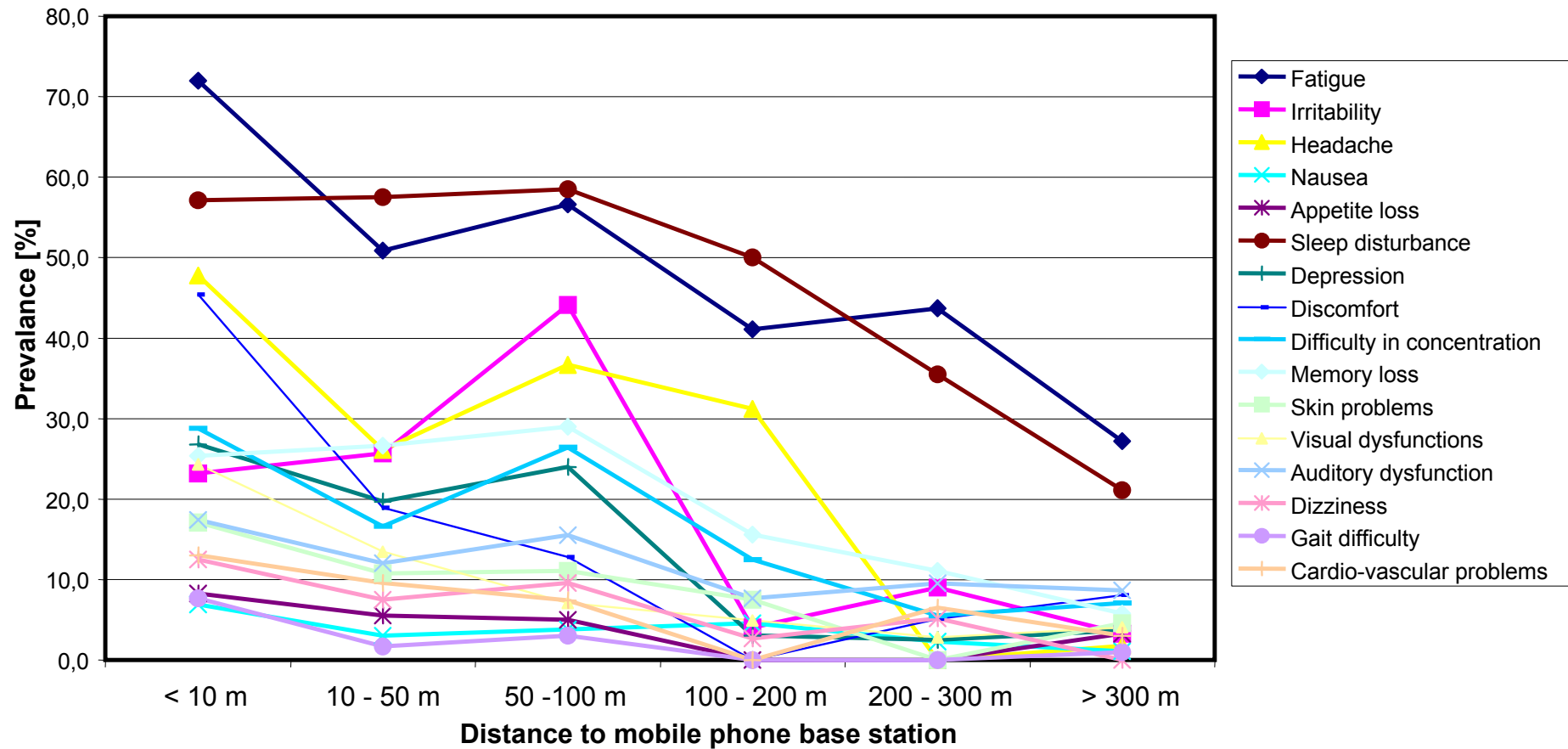
1932

Shortwave Effects [Schliephake 1932]

- ◆ After long exposure to the shortwave transmitter strong fatigue appears ...
- ◆ Restlessness, nervousness, ev. fear and pessimism ...
- ◆ Difficulty to fall asleep at night, affected persons wake up with a start ...
- ◆ In the morning strong fatigue, waking up feeling washed out ...
- ◆ After prolonged exposure dull pressure in the head and headaches appear aggravating unbearable ...

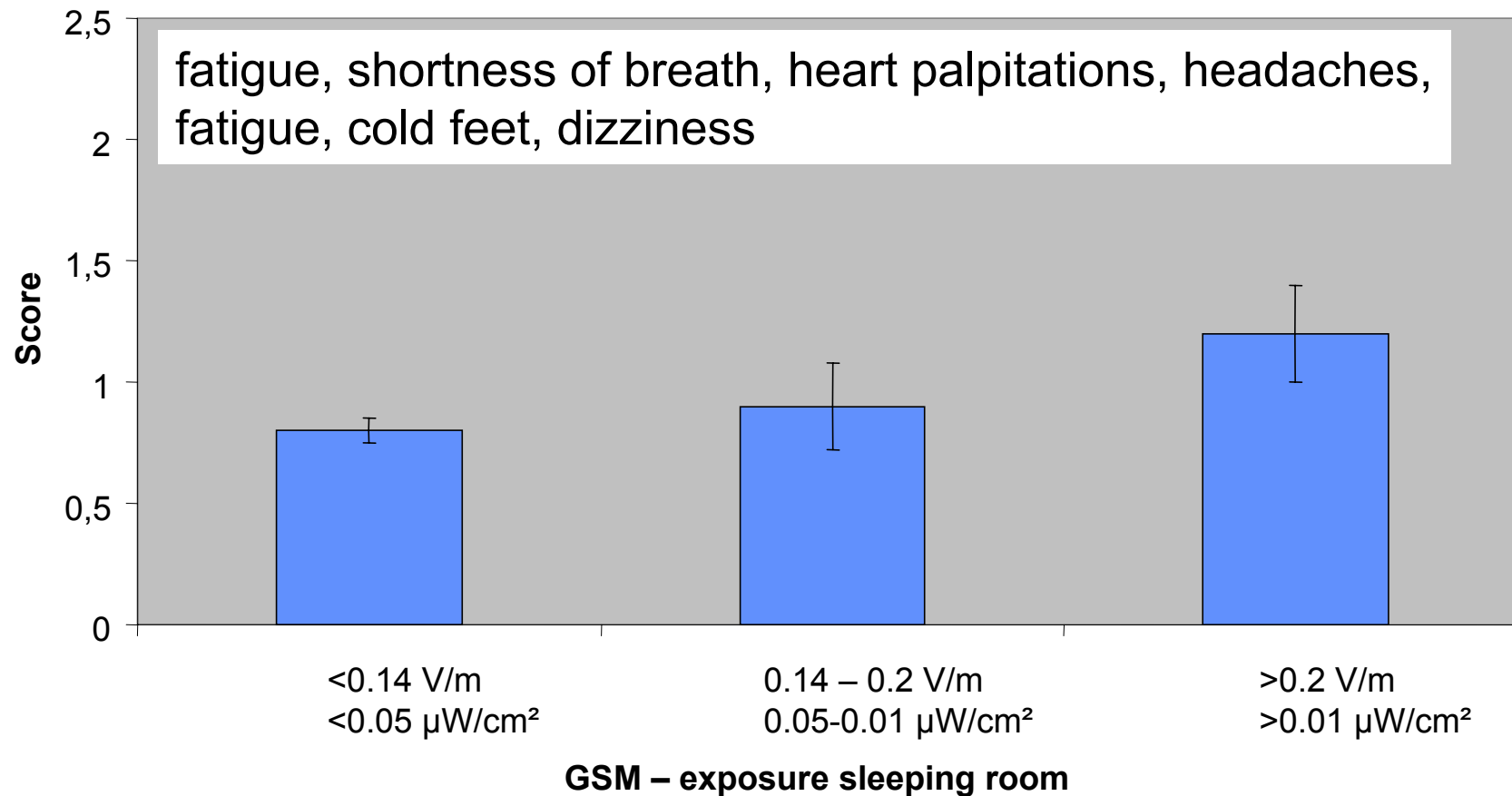
Mobile Phone Masts associated with reduced Quality of Life in France [Santini 2002]

Symptom Kategorie „very often“



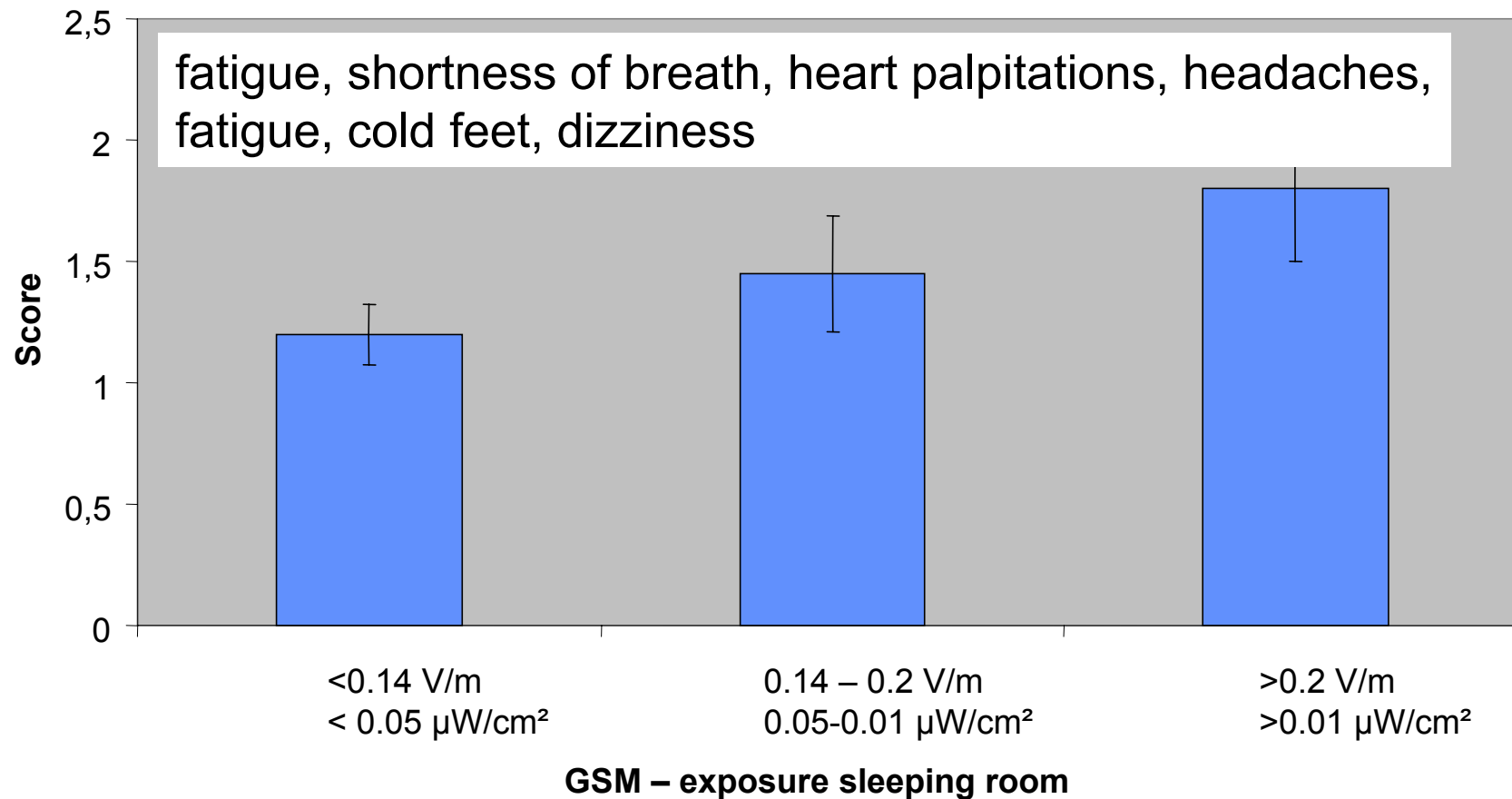
Mobile Phone Masts Associated with Reduced Quality of Life in Austria [Kundi 2002]

Group without concerns about mobile phone base stations



Mobile Phone Masts Associated with Reduced Quality of Life in Austria [Kundi 2002]

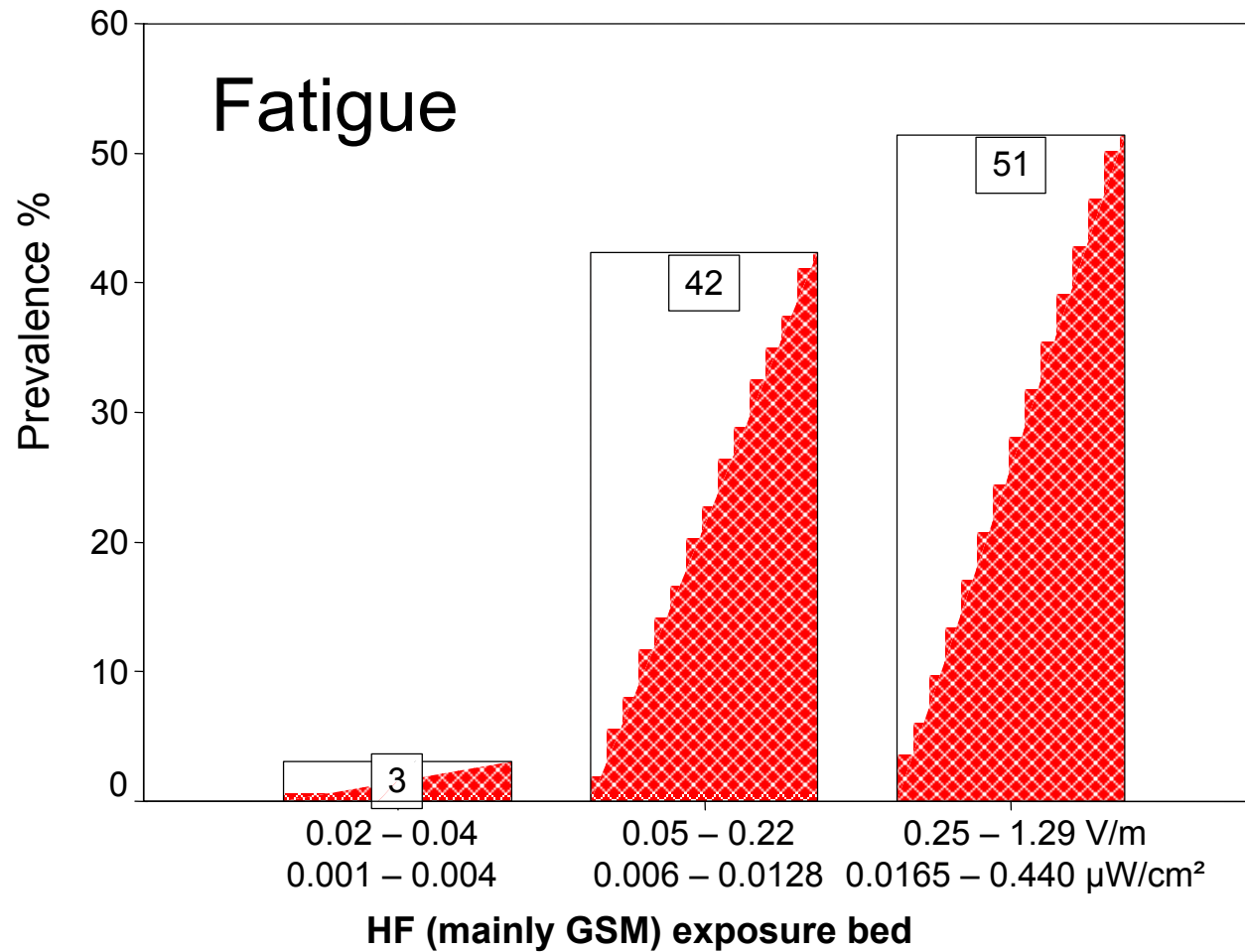
Group with concerns about mobile phone base stations



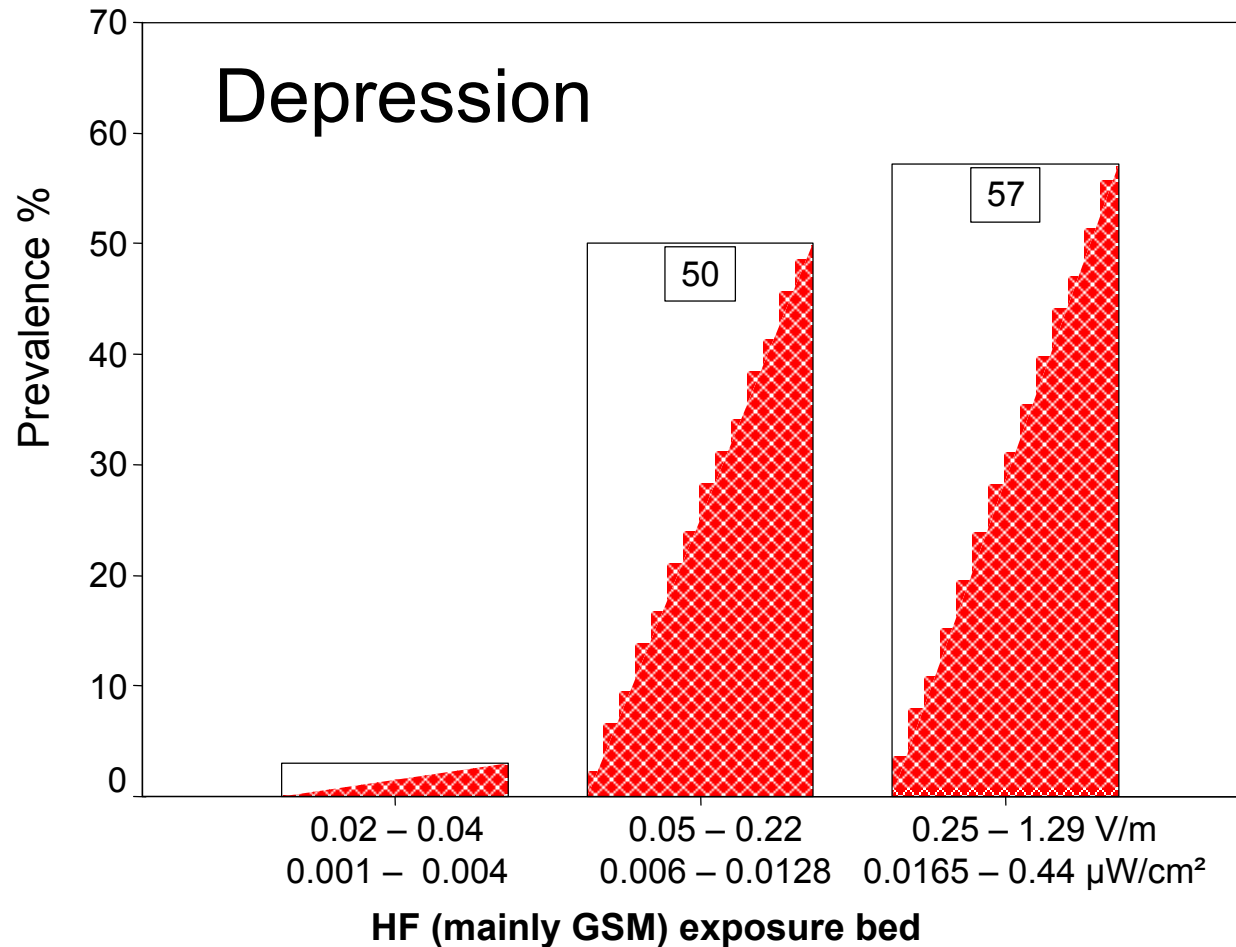
Mobile Phone Masts Associated with Reduced Quality of Life in Spain [Oberfeld 2004]



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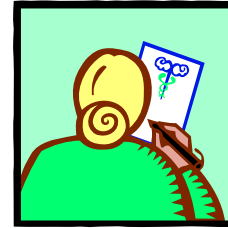


Mobile Phone Masts Associated with Reduced Quality of Life in Spain [Oberfeld 2004]

Significant exposure-response relationships taking age, sex and distance into account

- ◆ Fatigue
- ◆ Irritability
- ◆ Headaches
- ◆ Nausea
- ◆ Loss of Appetite
- ◆ Sleeping Disorder
- ◆ Depression
- ◆ Feeling of Discomfort
- ◆ Difficulty in Concentration
- ◆ Loss of Memory
- ◆ Dizziness
- ◆ Cardiovascular Problems

Suspected Cancer Clusters in the Vicinity of Mobile Phone Base Stations

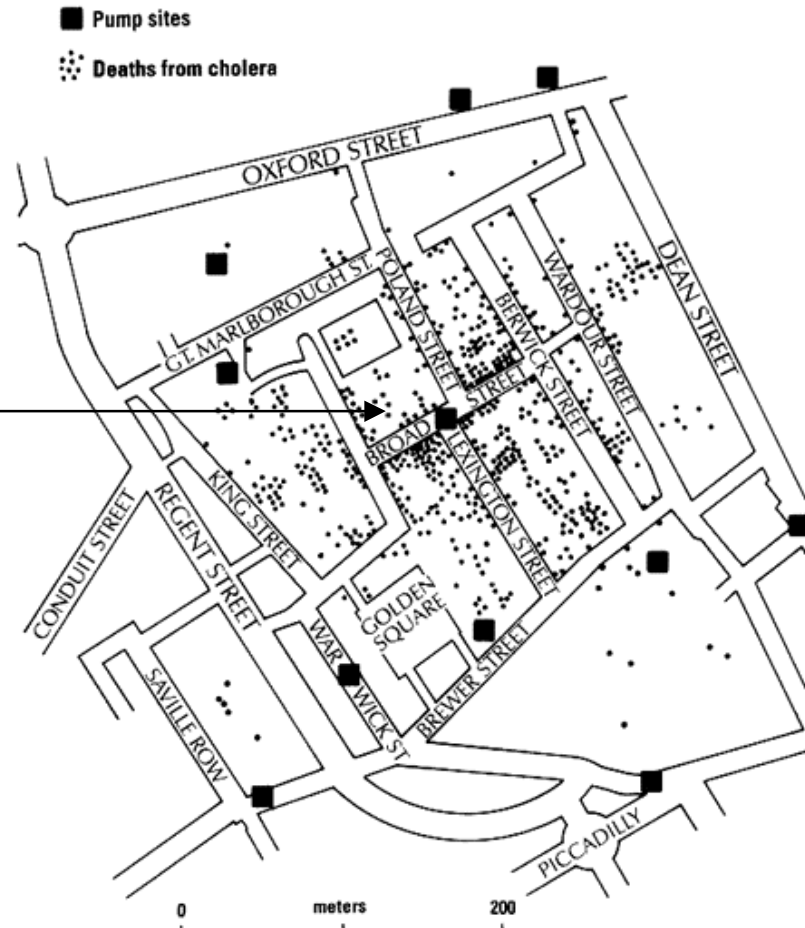


- ◆ United Kingdom: 7 cancer/disease clusters in UK
[Walker 2005]
- ◆ Germany: Naila, OR=3.2, cancer cases 8.5 years younger
[Eger 2004]
- ◆ Spain: 47 cancer clusters mentioned in newspapers
[omega 2004]

Cholera fatalities and public water pumps - London, September 1854

Cholera fatalities
accumulated around the
pump in the Broad Street

1854: John Snow
1883: *Vibrio cholerae*
1905: *Vibrio cholerae* el Tor



Master Plan EMF & Public Health



- ◆ Advisory Group of Experts and NGO's
 - ◆ Public Health, Environmental Epidemiology, Environmental Medicine, Building Ecologists, EMF Citizens Groups, Health Insurances
- ◆ EMF Public Health Research
 - ◆ Disease Clusters especially Cancer Clusters, Symptom Clusters
 - ◆ Incidence and Intervention Studies
- ◆ EMF Education Plan
- ◆ EMF Prevention Plan

Recommendations

- ◆ Mobile phone networks should apply to the lowest possible exposure values – a target value based on current empirical evidence could be $0.001 \mu\text{W}/\text{cm}^2$ outside.
- ◆ Full information of the public
 - ◆ Mobile phones should be used for essential and urgent calls only
 - ◆ Mobile phone calls should be kept short
 - ◆ DECT and other cordless phones and WLAN are not recommended
- ◆ Epidemiological research for symptoms, cancer and other diseases