

Rio de Janeiro
**6th International Non-Ionizing
Radiation Workshop of ICNIRP**



RF protection policies for RF fields

Bernard Veyret

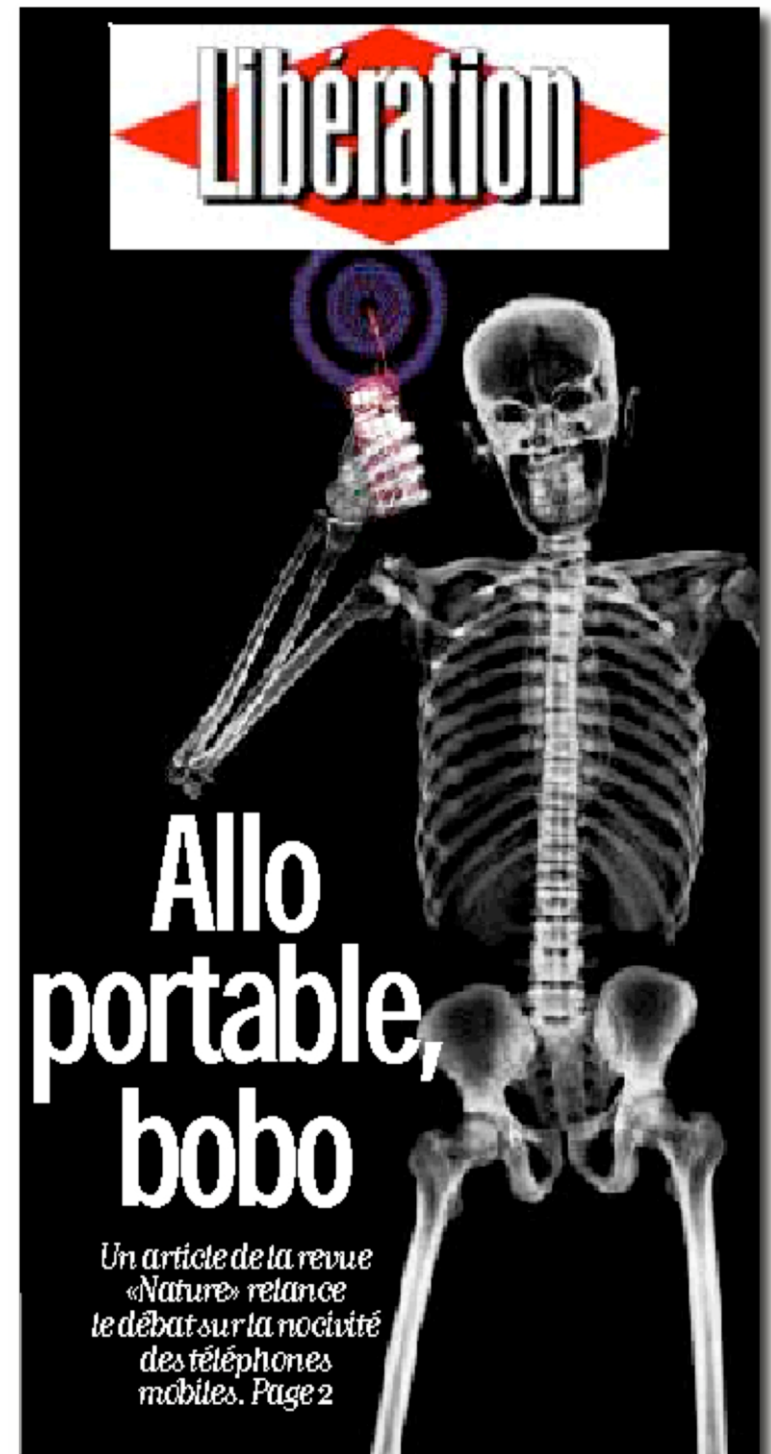
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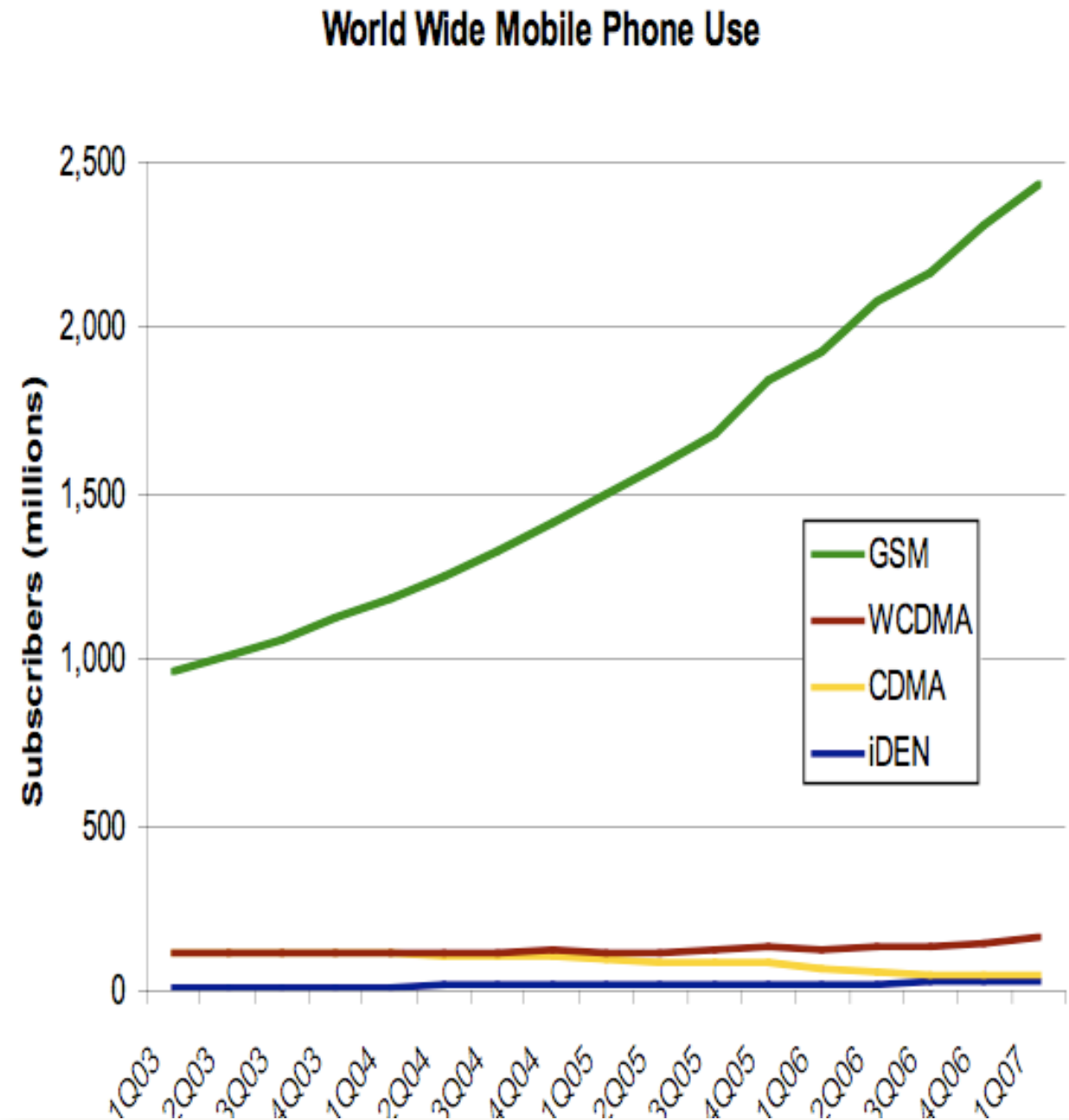
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RF protection policies

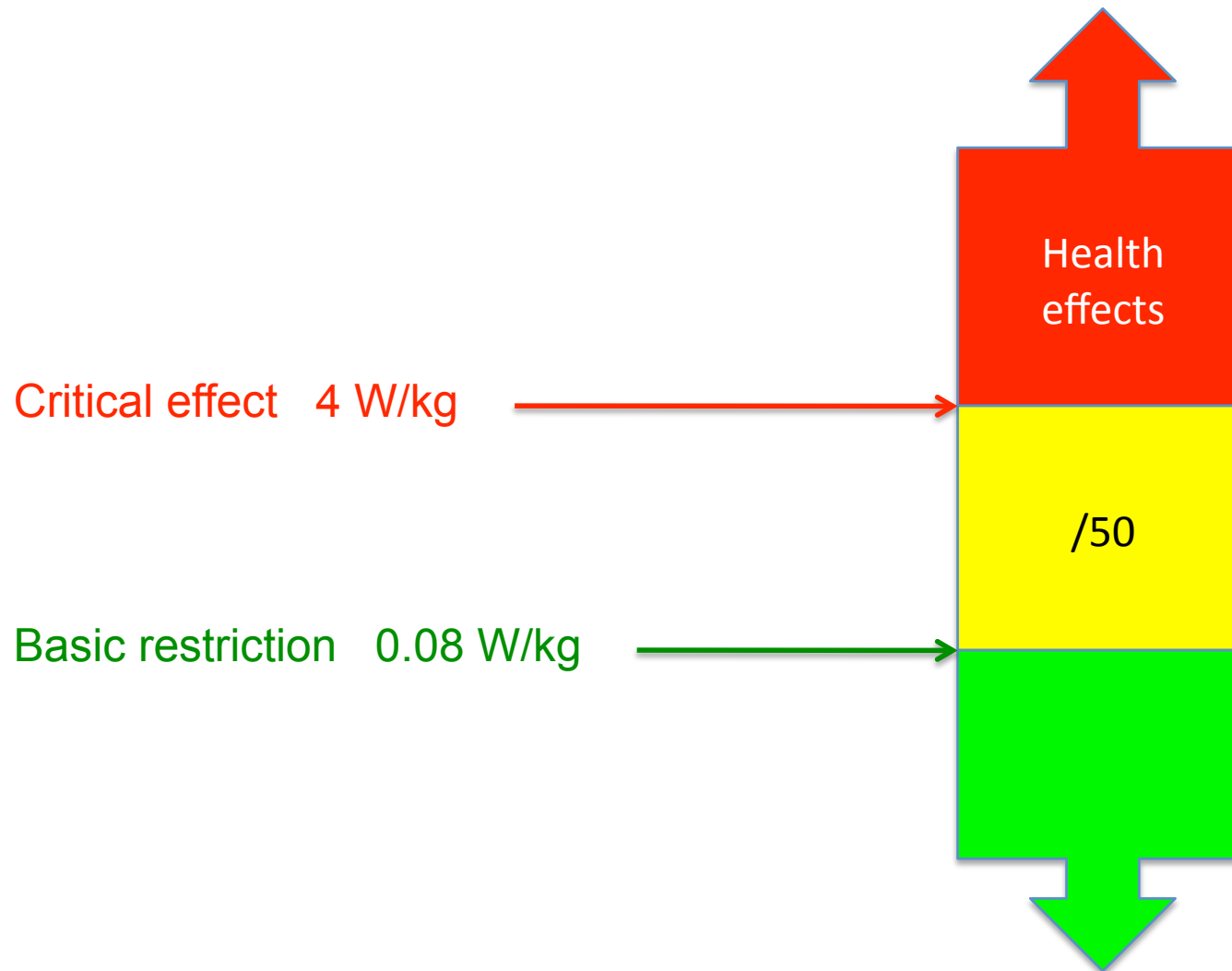
- Protection from adverse health effects
- Exposure limits
- Precautionary measures?



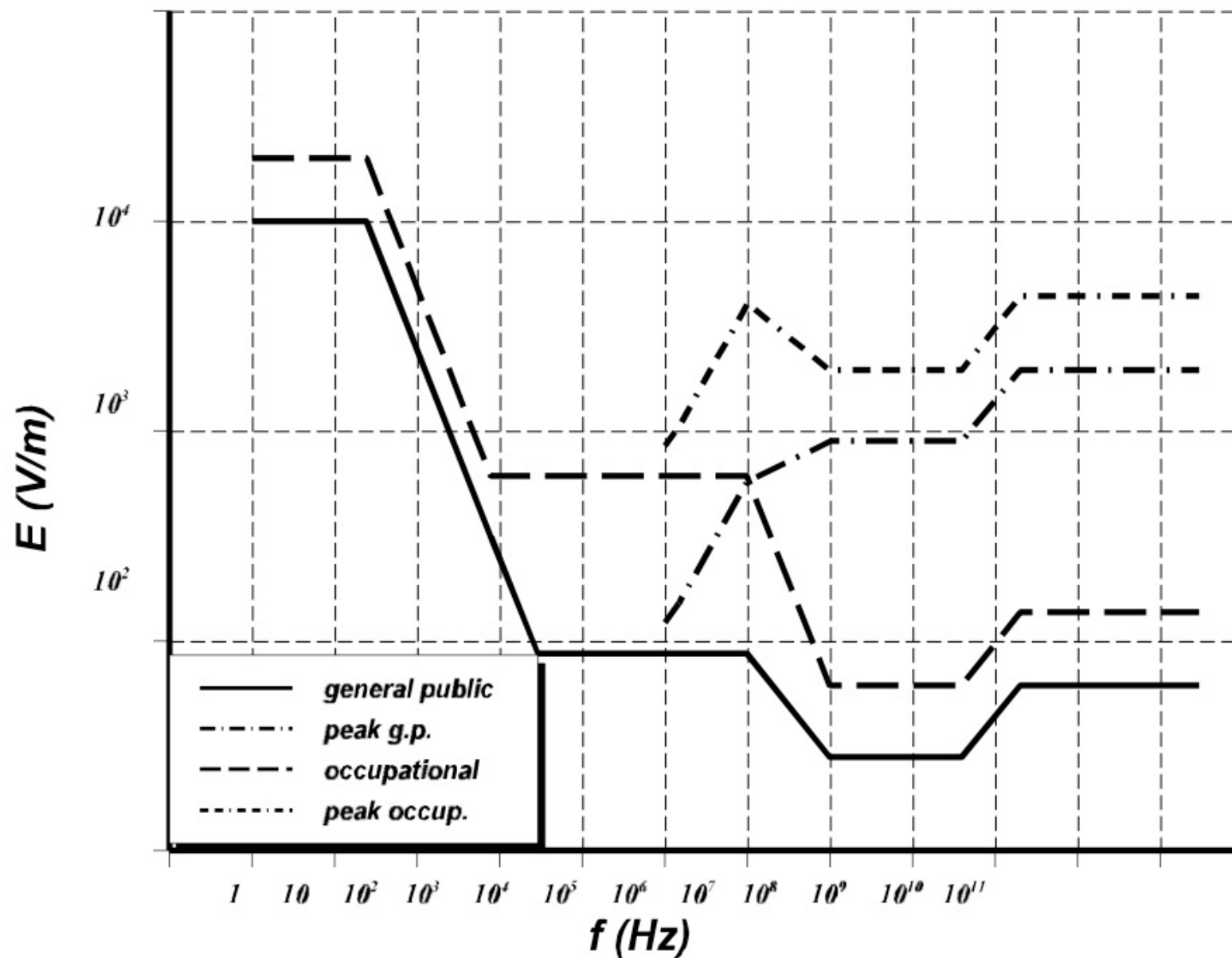
mobile telephony



Basic restriction



References levels



IEEE vs. ICNIRP: basic restriction



SAR Basic Restrictions Comparisons

IEEE C95.1- 2005 (2006)

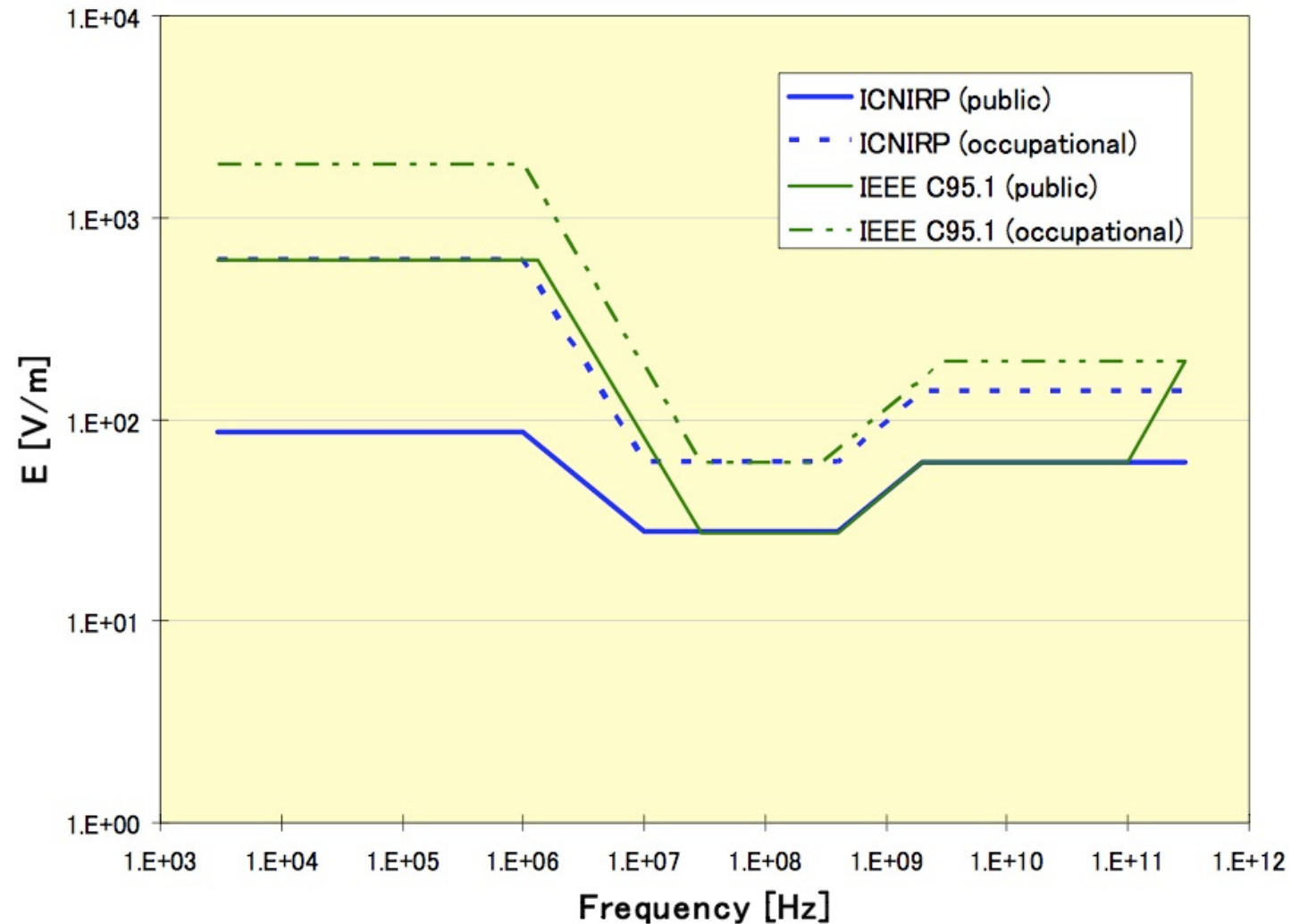
- ❖ “to protect against established adverse health effects”
- ❖ SAR applies between 100 kHz – 3 GHz
- ❖ Averaged over 10 g tissue in a cube
- ❖ Averaged over up to 30 min for general public and up to 6 min for controlled environment
- ❖ Pinnae have similar limit as extremities
- ❖ Upper arms and upper legs have same limits as body

ICNIRP (1998)

- ❖ “protection against known adverse health effects”
- ❖ SAR applies between 100 kHz -10 GHz
- ❖ Averaged over 10 g contiguous tissue
- ❖ Averaged over 6 min
- ❖ Pinnae limit is the same as body
- ❖ Upper arms and upper thighs are part of limbs and have different limits from body

IEEE vs. ICNIRP: reference levels

Comparison of ICNIRP/ICES E-field limits



RF environmental levels

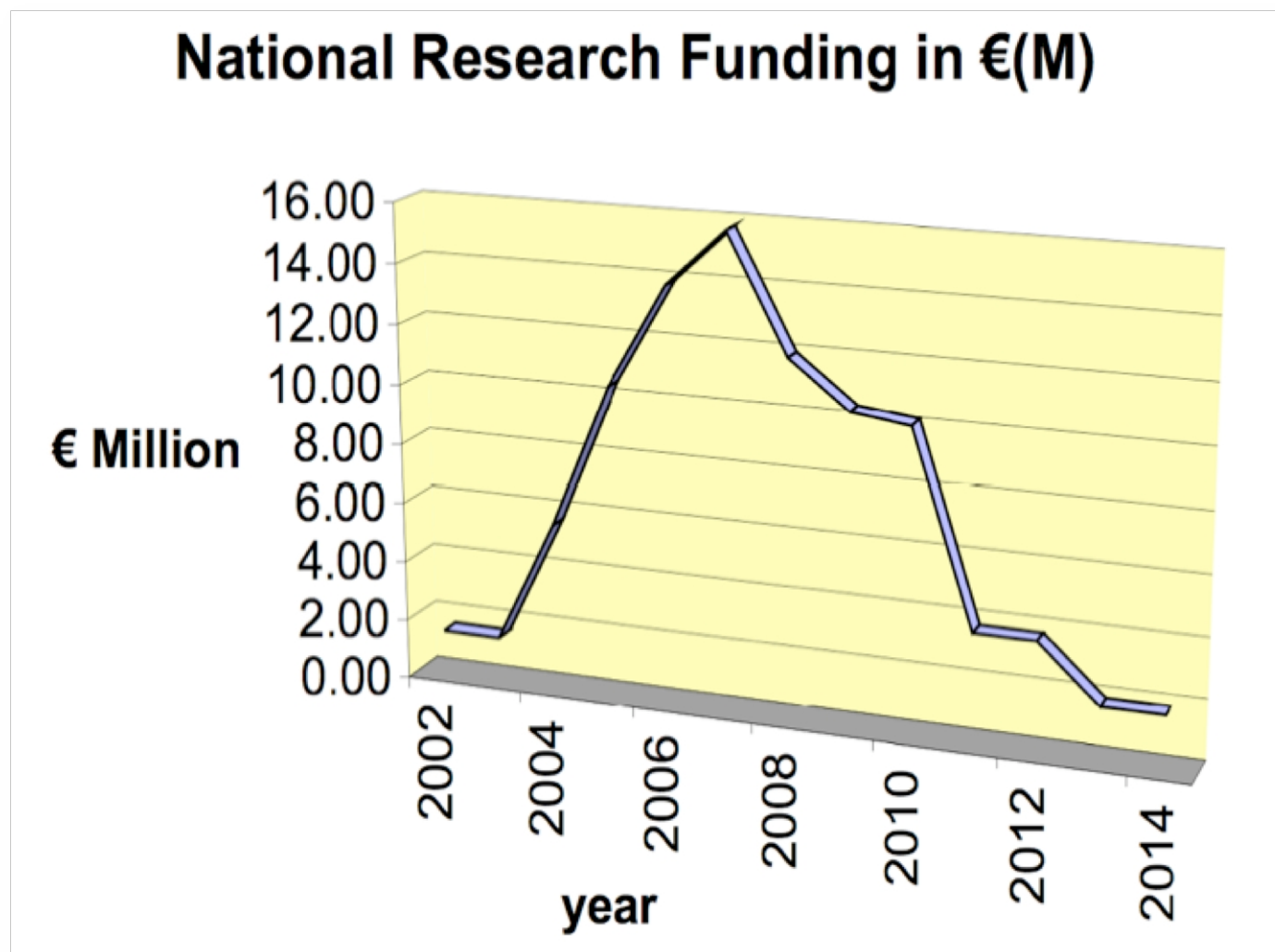
- Base stations etc.
 - 1/10000 below guidelines
- mobile telephones
 - GSM:
 - Max SAR ca. 1 W/kg
 - Real life ca. 100 mW/kg
 - Low level with hands-free kits
 - 3G
 - Very low SAR



Long-term low-level exposure

- Current guidelines do not *a priori* exclude :
 - 1. health effects of long-term low-level exposure
 - 2. non-thermal effects
- 1. No evidence of harm from investigations on long-term exposure of animals
- 2. No established thermal effects and no plausible mechanism

Research activity



Research recommendations

- EC
 - A long-term prospective cohort study,
 - Health effects of RF exposure in children,
 - Exposure distribution in the population,
- EMF-NET
 - <http://web.jrc.ec.europa.eu/emf-net/reports.cfm>
- WHO
 - www.who.int/peh-emf/research/agenda/en/index.html

Precaution

- EC: Precautionary Principle
 - the precautionary principle should be invoked “where there are indications that the possible effects on the environment, or human, animal or plant health may be potentially dangerous”.
 - This is not the case regarding EMFs as there are no clear scientific indications that the possible effects on human health may be potentially dangerous.



EC 2nd report on implementation



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 1.9.2008
COM(2008) 532 final

**REPORT FROM THE COMMISSION ON THE APPLICATION OF COUNCIL
RECOMMENDATION OF 12 JULY 1999 (1999/519/EC) ON THE LIMITATION OF
THE EXPOSURE OF THE GENERAL PUBLIC TO ELECTROMAGNETIC FIELDS
(0 Hz to 300 GHz)**

Second Implementation Report 2002-2007



EC 2nd report on implementation

- “For RF fields **no health effect has been consistently demonstrated** at exposure levels below the limits of ICNIRP established in 1998. However, **the database for evaluation remains limited**, especially for long-term low-level exposure.”



EC: basic restriction

Country	Implemented basic restrictions stricter than in the Recommendation	Implemented basic restrictions the same as in the Recommendation	Implemented basic restrictions less strict than in the Recommendation
AT		X	
BE	X ^a		
BG		X	
CH		X	
CZ		X	
CY			X
DE			X
DK			X
EE			?
ES		X	
FI		X	
FR		X	
GR	X ^a		
HU		X	
IE			X
IT		X	
LT			X ^b
LU		X	
LV		X	
MT		X	
NL			X
PL			X
PT		X	
RO		X	
SE		X	
SI			X
SK			X
UK		X	



EC: reference levels

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DE		X	
DK			X
EE		X	
ES		X	
FI		X	
FR		X	
GR	X ^a		
HU		X	
IE		X	
IT	X		
LT	X		
LU	X		
LV		X	
MT		X	
NL	X ^a		
PL	X		
PT		X	
RO		X	
SE		X	
SI	X		
SK		X	
UK		X	



WHO database on standards

International
EMF Project



EMF WORLD WIDE STANDARDS



Search for a country:

Continent / Region:

Country:

Conclusions



- Protection should be based on scientific knowledge
 - How to cope with public concern when not based on science? (e.g. 0.6 V/m)
 - Common sense (“prudent avoidance”) precautionary measures recommended by various organizations
- High level of protection from current guidelines (uncertainty on mobile telephones?)

WE'LL NEVER COMPLETE THIS LONG-TERM
STUDY ON THE LINK BETWEEN CELL PHONES
AND BRAIN CANCER IF THESE IDIOTS
INSIST ON USING THEIR PHONES
WHILE DRIVING!



LARRY
WRIGHT

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