

# ongoing and planned EHS research

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# the EHS issue

- ➔ high public awareness
- ➔ EHS prevalence
- ➔ physician' beliefs
- ➔ ongoing and planned research
- ➔ evidence and models
- ➔ EHS and sleep disorders

# EHS prevalence

- regional differences

*Bergqvist et. al. 1997*

- physician's conviction

*Leitgeb et. al. 2004*

- estimations: ~ 2%

A: < 2% *Leitgeb 1995*

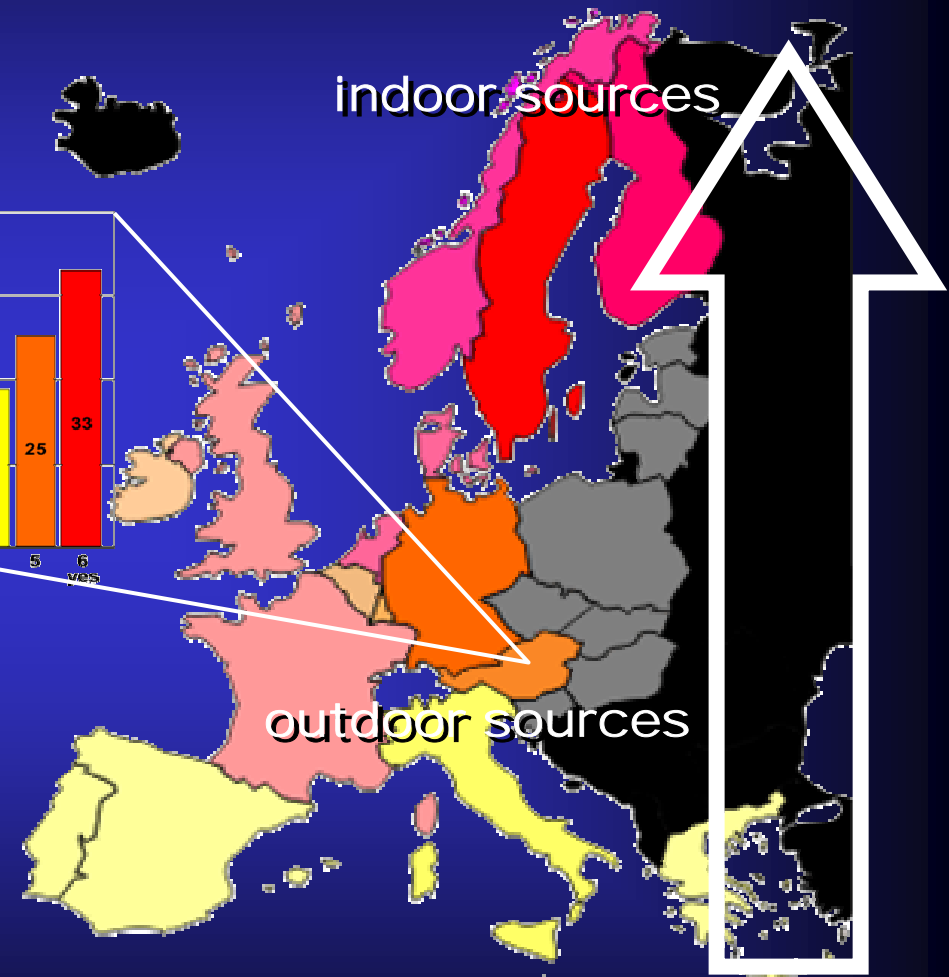
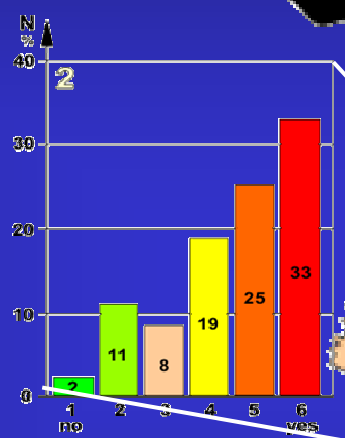
S: 2% *Ericsson 2000*

S: 1,5% *Hillert et. al. 2002*

US/Ca: 3,2% *Levallois et. al. 2002*

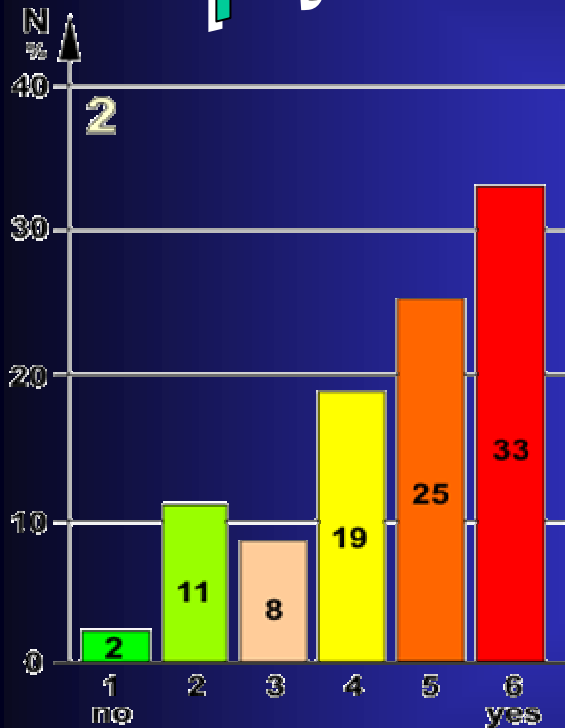
- sources change

VDU → power lines → MTC basestations

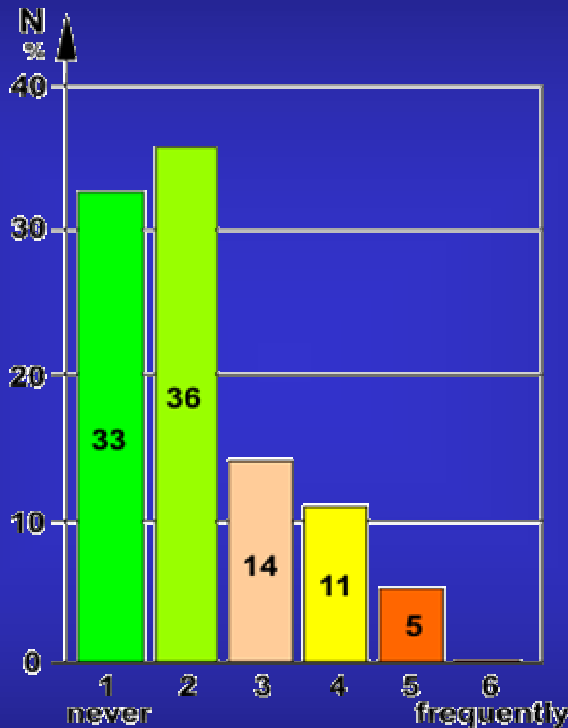


Leitgeb et. al. 2004

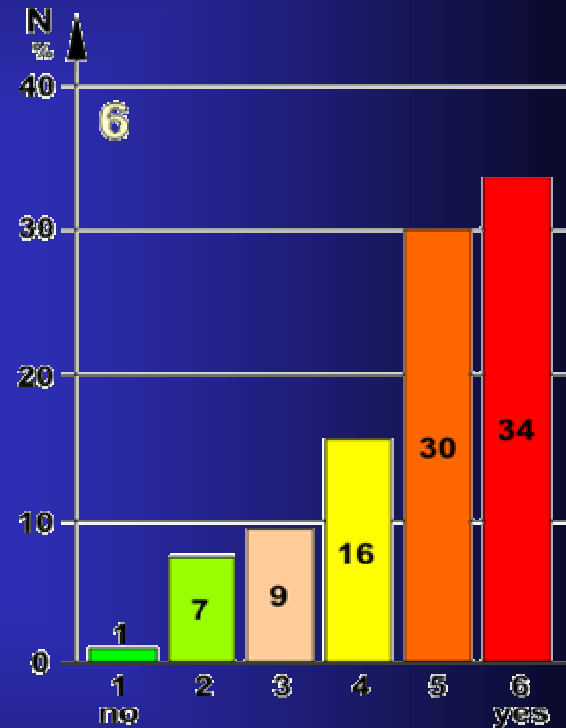
# physician's beliefs



96%: EMF cause illness



67%: having EHS patients



96%: EMF + cofactors cause illness

# ongoing and planned EHS research

## EHS research recommended, e.g. by

- **GB:** IEGMP 2000
- **D:** SSK 2003
- **EU:** EMF-NET 2003
- **WHO:** If causal link confirmed, particular lab. studies

## EHS research approaches

- prospective studies
- laboratory (*provocational*) studies
- field studies
- epidemiological studies

# prospective and laboratory studies

## Collection of EMF-attributed symptoms / cases

*Calls for listing of EMF- associated symptoms and related sources*

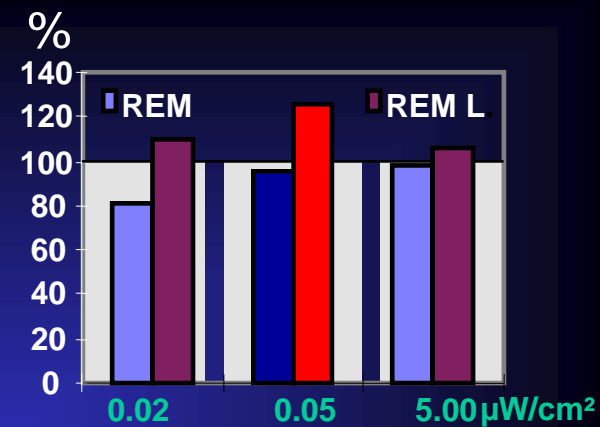
- **D:** “Mainz Watchdog” - hotline
- **AUS:** ARPANSA EMR health complaints register

## Investigation of EHS cases

- **A, D, SF, S:** EMF perception and scoring  
*Shortterm- provocation to ELF-MF (A, S), MTC- $\mu$ W (A,D,SF,S)*
- **A, D, SF, S, J, K, UK:** EMF provocation and bioparameters  
*Shortterm- provocation to MTC- $\mu$ W*
- **NL, CH:** EHS: well being and cognition  
*TNO study replication ongoing in CH*
- **D, J, S:** EHS and psychological and somatic cofactors / indicators  
*chemical sensitivity (dental amalgam, heavy metals), blood parameters, skin sensations  
allergies, threat somatisation tendency*



# field and epidemiological studies



## EMF- associated laboratory sleep studies

- **D;CH:** simulated MTC signals and sleep disturbance  
*Röschke et. al.: 3 studies with simulated MTC-handset fields*  
*Borbely et. al , Huber et. al: Short-term simulated handset, basestation exposure*

## EMF- associated on-site sleep studies

- **CH:** ELF-E,B and sleep disturbance  
*Müller et. al.: On-site provocation to weak ELF fields, no follow up*
- **D:** basestation and sleep disturbance  
*Danker-Hopfe et. al.: Blinded basestation- switching : Pilot study finished, main study to be started*
- **A:** environmental RF-EMF and sleep disturbance  
*Leitgeb et. al.: Blinded RF-EMF-shielding: Pilot study finished, main study ongoing*

## Basestation- epidemiological studies

- **CH, D, GB:** Feasibility studies ongoing  
*Estimation strategies for exposure assessment*



# well being and cognition

## TNO- study

double-blind exposure to MTC handset signals

### ● well being

- higher score for EHS at UMTS
- no significant changes for GSM

### ● cognition

- influences on both, EHS and controls
- higher score-sum for controls
- selective results for groups / phones

### author's conclusions:

- evidence for causal link
- impact on wellbeing
- EHS stronger reacting

well being	EHS 11m+25w			control 22m+14w		
	9	18	UM	9	18	UM
well being sum			X			X
anxiety			X			
somatic			X			
inaadequacy			X			X

cognition	EHS 11m+25w			control 22m+14w		
	9	18	UM	9	18	UM
reaction time	X					X
memory comparis.					X	X
visual selective			X			X
dual tasking					X	
info filtering	X					

replication necessary