

# **Epidemiologic Studies on Mobile Phone Basestation Exposures**

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# Background

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- **Mobile phone basestations have become a widespread public health concern.**
- **Anecdotal reports associate non-specific health symptoms to them.**
- **There is public and political pressure to perform MP-BS epi studies.**
- **COST Action has been asked by a national government to comment on whether EPI basestation studies can be scientifically recommended.**



# limitations

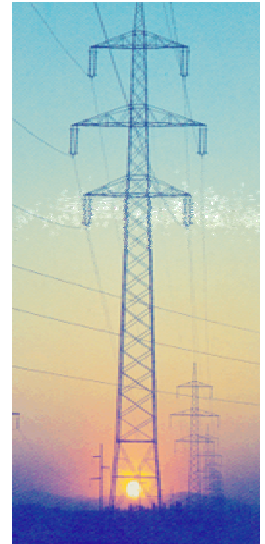
Epidemiologic studies are useful for **hypothesis generation** and **hypothesis testing** however, alone not capable to prove causal relationships in lack of other support.

## Lessons from MF-epi studies

- more than 50 major MF-epi studies since 1979
- more than 18 major MF-epi childhood studies, involving more than 8.800 cases and 13.000 controls

### Outcome: (IARC 2002)

- Inadequate evidence for (general) carcinogenicity of ELF-MF.
- limited evidence for carcinogenicity of ELF-MF in relation to childhood leukaemia.
- „It cannot be excluded that a combination of selection bias, some degree of confounding and chance could explain the results *(on carcinogenicity)*.“



WHO, EMF-NET do **not** recommend MF-Epi studies anymore

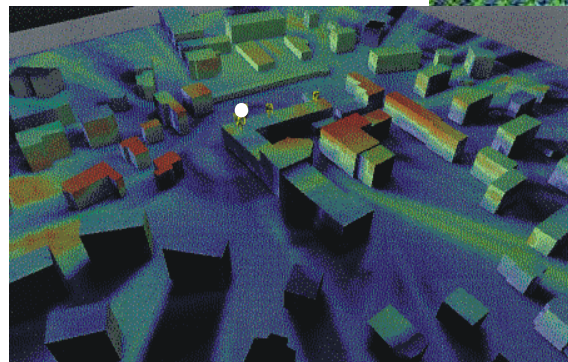
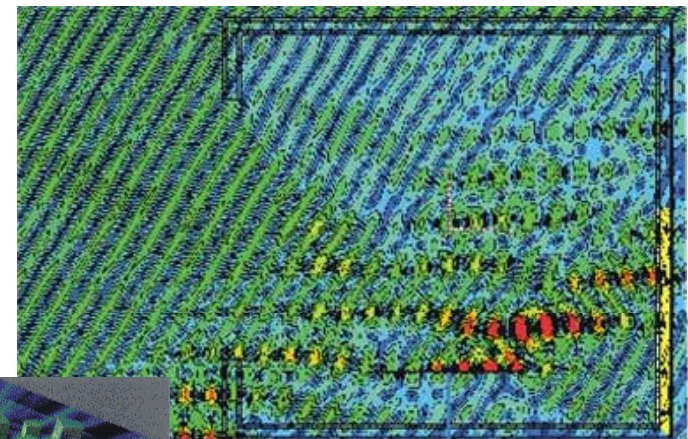
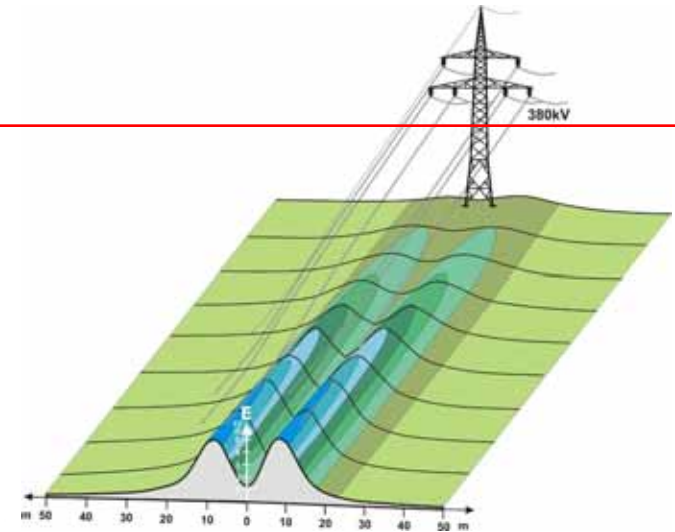


# MP-BS epi studies

- While ELF-MF of external sources are *dominating, with well-known field distribution, propagation, exposure metrics and dosimetry having constant frequency, technology ...*

## MP-BS- conditions are more complex

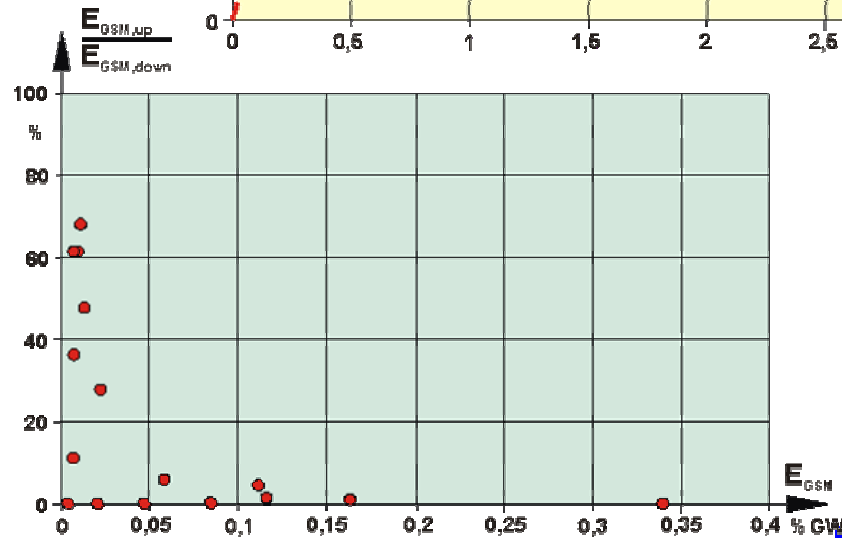
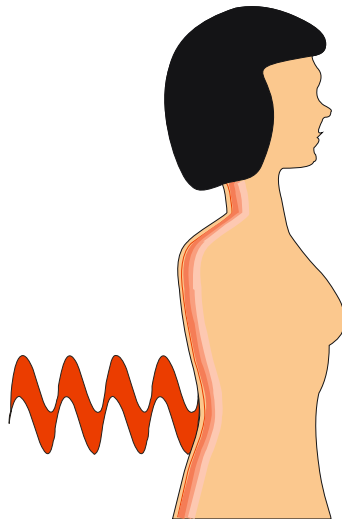
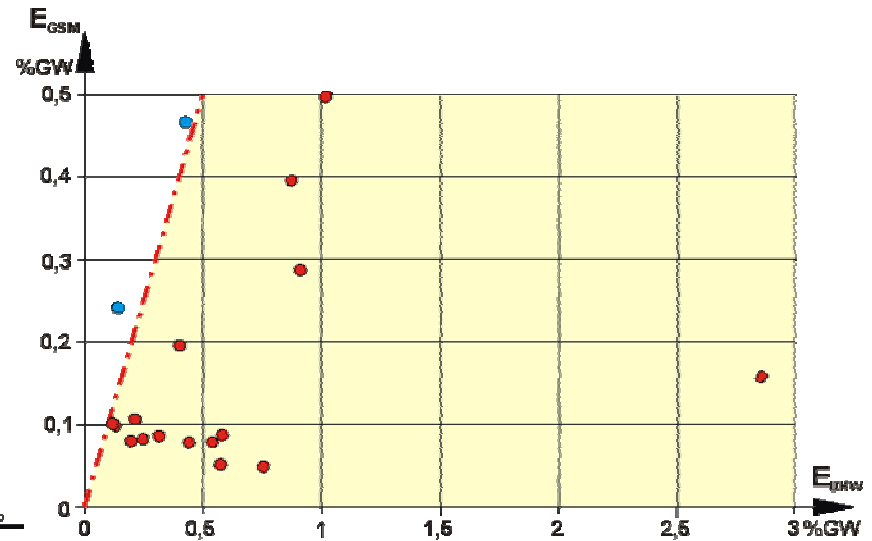
- MP-BS-RF not constant over time:
  - ↗ increasing user number (channels)
  - ↗ increasing antenna density
  - ↗ changing technology (cw → GSM → UMTS → Wimax)
  - ↗ added services (TETRA)
- complex radiation pattern (*not only GSM*):
  - ↗ outdoors
  - ↗ indoors
- spectral HF composition, changing
  - ↗ with site
  - ↗ with time



# MP-BS epi studies

MP-BS- conditions more complex compared to MF-EMF

- MP-BS-RF rarely dominating
  - ↗ dominant external sources (radio, TV)
  - ↗ mobile phone uplink
  - ↗ mobile phones
- Signals have small penetration depths



# MP-BS epi studies



- Motivation to perform epi studies **not** coming from highly exposed.
- No scientific rationale for GSM studies  
„pulsation“ used for trains of > 500.000 waves
- Political motivation, concern-driven,

No reason to assume that MP-BS epi studies would be more helpful than ELF-MF epi studies.

# Conclusion



## COST 281

- acknowledges the need for further studies on potential weak field effects, involving but not restricted to field studies, provided they can be performed under good controlled conditions.
- Based on the lessons learned from ELF-epi studies MP-BS epi studies are not considered helpful for investigating potential small risks under such ill-conditioned constraints.
- Due to the expected poor cost/efficiency ratio, MP-BS epi studies should not be given priority over the more promising scientific approaches.
- If performed, MP-BS epi studies are hardly efficient tools for risk communication.

