WHO’s International EMF Project

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Collaboration

- International partners
  WHO, UNEP, ICNIRP, ILO, IEC
  IARC, NATO, ITU & EC
  – National partners >45
  • WHO collaborating institutions
    USA, UK, Japan, Sweden & Germany
  Independent scientific institutions
An **International Advisory Committee** of representatives of the international and national collaborating agencies, and **WHO** collaborating institutions, provide oversight to the EMF Project.

- **Provide oversight on the conduct of the Project.**
- **Review Project outputs**
- **Provide a forum for a co-ordinated international response on the health concerns raised by exposure to EMFs.**
  - Health issues
  - Standards
INTERNATIONAL ADVISORY COMMITTEE

Membership

Members:
- Representatives of governments providing resources for Project
- Representatives of scientific collaborating organizations
- Representatives of WHO collaborating centres

Observers:
- Representatives of governments interested in supporting Project
- Representatives of independent scientific bodies
International EMF Project
Definitions of biological and health effects

- WHO defines health as a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity
- Biological effects are measurable responses to EMF exposure, not necessarily hazardous
- Health hazard is a biological effect producing consequences outside the body's normal range of physiological compensation and is detrimental to health or well-being

International EMF Project
Psychosocial effects or hypersensitivity to EMF

- WHO’s definition of health requires that effects such as headaches, sleep disturbance, irritability or other effects that compromise well-being must be taken into account
- Effects must be valid reproducible responses to EMF exposure
Health Risk Assessment
Types of literature

✦ Published in good peer-reviewed journals
✦ Reports of independent agencies
✦ Conference abstracts are of little value:
  – contain scant information useful for a proper evaluation
  – final outcome of study only when all results are available
    and properly analysed

WHO approach to EMF research
for health risk assessment

✦ Develop “best possible” database needed by
  WHO/IARC to assess health hazards?
✦ Review literature to identify research to fill gaps
✦ Replicate research suggestive of health consequence
  but not substantiated
✦ Promote research agenda to funding agencies
Overall assessment: Weight of evidence

- Evidence considered as a whole
- Scientific judgement: reflecting strength of evidence from studies in humans, animals and other relevant data
- No way to prove something does not cause effects; need to estimate how much a set of evidence changes probability that exposure causes an outcome
- Health risk assessments by WHO Task Group

International EMF Project
Standards Harmonisation

- International EMF Project will identify health risk using WHO/IARC procedures
- WHO does NOT develop standards, only health risk assessments
- ICNIRP full partner in Project and publishes international standard
- Project provides international forum for consensus on standards
- All major standards setting countries involved in Project
Revised WHO Fact Sheet (#193)
Mobile Phones and Base Stations (1)

• No recent review concludes that RF fields from mobile phones or their base stations causes any adverse health consequence
• Gaps in knowledge have been identified for further research
• About 3-4 years for the required RF research to be completed, evaluated and to publish the final results of any health risks.

Revised WHO Fact Sheet (#193)
Mobile Phones and Base Stations (2)

Until research is completed, WHO recommends:

Government:
• Authorities adopt health-based guidelines
• If, because of public concern, want to introduce additional precautionary measures to reduce exposure to RF fields:
  – Don’t undermine the science base of the guidelines with arbitrary additional safety factors into the exposure limits
  – Separate policy to encourage voluntary reduction of RF fields by equipment manufacturers and the public.

Individuals: No special precautions needed for mobile phones. If concerned limit own or children's RF exposure by limiting the call time or using “hands-free” devices to keep mobile phones away from the head and body.
Revised WHO Fact Sheet (#193)

Mobile Phones and Base Stations (3)

✦ Obey local restrictions on mobile phone use to avoid EMF interference
✦ Motorists strongly discouraged from using mobile phones while driving
✦ Fences needed for some base stations where exposure limits may be exceeded
✦ No need for RF-absorbing covers or other "absorbing devices" on mobile phones
✦ While RF field levels around base stations are not considered a health risk, siting decisions should take into account aesthetics and public sensibilities
✦ Open communication between mobile phone operators and the public during the planning stages for new antennas can help create public understanding and greater acceptance of a new facility
✦ Effective communications among scientists, government industry and the public to raise awareness of mobile phones and reduce mistrust and fears

Health effects of ELF field exposure are due to induced electric currents and fields.

Health effects: Nerve and muscle stimulation effects depend on the current density (> 10 mA/m²)

Effects not established:
Cancer, memory loss, suicide, neurodegenerative such as Alzheimer's and Parkinson's disease, and subjective effects

Repacholi & Greenebaum Bioelectromagnetics (1999)
NIEHS RAPID Program on ELF Fields

- An international scientific panel convened by NIEHS concluded that ELF electric and magnetic fields should be regarded as a "possible human carcinogen"
- Based on the epidemiological studies
- Animal studies were not supportive
- Suggestive *in vitro* study evidence

IARC Classification Scheme for Human Carcinogens

**Group 1:** Is carcinogenic to humans  
**Group 2A:** Probably carcinogenic to humans  
**Group 2B:** Possibly carcinogenic to humans  
**Group 3:** Not classifiable as human carcinogen  
**Group 4:** Probably not carcinogenic to humans
WHO Fact Sheet on ELF Fields and Health

- Strict adherence to existing safety standards
- Fences or barriers around strong ELF sources to preclude unauthorised access to areas where exposure limits may be exceeded.
- Consultation with local authorities and the public in siting new power lines:
- An effective system of health information and communication among scientists, governments, industry and the public can help raise general awareness of programmes to deal with exposure to ELF fields and reduce any mistrust and fears.

WHO Fact Sheet on Video Display Terminals

- Alleged health effects of VDTs: headaches, dizziness, tiredness, cataracts, adverse pregnancy outcomes and skin rashes.
- Studies failed to show any effect on reproduction due to EMF emitted from VDTs.
- Cataracts and other eye diseases were not found to have any link with VDT work. Glare and reflections from VDT screens are a source of eyestrain and headaches in extreme circumstances.
- Tests on people with symptoms such as skin rashes or itching were not found to result from VDT EMF exposure.
- Except for screens that reduce glare (causing eyestrain), protective devices are not recommended by WHO.
EMF Project

- Physical properties and effects on biological systems. Fact Sheet #182 Oct. 1997
- Mobile telephones and their base stations. Fact Sheet #193 (updated June 2000)
- Video display Units (VDUs) and human health. Fact Sheet #201 July 1998
- Extremely low frequency electromagnetic fields. Fact Sheet #205 Nov. 1998
- Radars and Human Health. Fact Sheet #226 June 1999
- Cautionary Policies (WHO Backgrounder) March 2000
- Environmental Hypersensitivity (in draft)
- EMF Environmental Impacts (in draft)
- Intermediate Frequencies (in draft)
- Protection of the Public from EMF (in draft)

On home page: http://www.who.int/emf/ in multiple languages