Finnish Institute of Occupational Health

Compliance with the EMF occupational limitations:

Groups with special needs

Maila Hietanen

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Occupational groups at risk

According to the Directive 2004/40/EC, compliance with the exposure limits and action values provides a high level of protection for workers, as regards the established health effects from exposure to EMFs.

However, this compliance may not protect workers with special needs, such as

- pregnant women
- workers with implanted medical devices
- workers at risk from indirect effects of EMFs
- workers with EHS symptoms

A. Pregnant workers

The employer shall give particular attention to effects concerning the health and safety of workers at particular risk, such as pregnant workers

The EMF Directive does not foresee specific limit values or action values for pregnant workers

Therefore, the only legal occupational limitations in EU countries are those given in Directive 2004/40/EC.

Council Directive 92/85/EEC

Communication from the European Commission on the guidelines on the assessment of the chemical, physical and biological agents considered hazardous for the safety or health of pregnant workers or workers who have recently given birth and are breastfeeding

COUNCIL DIRECTIVE 92/85/EEC

The objective of the Council Directive is to introduce measures to encourage improvements in the safety and health at work to protect pregnant workers, and workers who have recently given birth and are breastfeeding, who must be considered to be **a specific risk group.**

Physical agents to be considered

Annex A: Agents regarding to cause foetal lesions

(a) shocks, vibration or movement
(b) handling of loads entailing risks
(c) noise
(d) ionizing radiation
(e) **non-ionizing radiation**
(f) extremes of cold or heat
(g) movements and postures, travelling, mental and physical fatigue and other physical burden

Obligations of the employer

According to the Directive 92/85/EEC , the employer is obliged to assess any specific risk of exposure of pregnant workers, such as exposure to non-ionizing radiation

Based on this risk assessment, the employer shall decide what measures should be taken
- moving of the worker to other job
- granting of a leave

Challenge for international harmonizing efforts

- In practise, the measures focused on protecting pregnant women from over-exposure to EMF are very inhomogeneous, depending on health policy of various companies and countries

- Co-operation of WHO/ICOH/ICNIRP for providing harmonized advice for EMF exposure risk management at work during pregnancy

ICOH = International Commission on Occupational Health

www.icohweb.org
www.icoh2009.org

B. Interference problems

The employer shall consider interference problems with medical devices, such as metallic prostheses, cardiac pacemakers and defibrillators, cochlear and other implants

Interference with active implanted medical devices (AIMD) may occur at levels below the action values

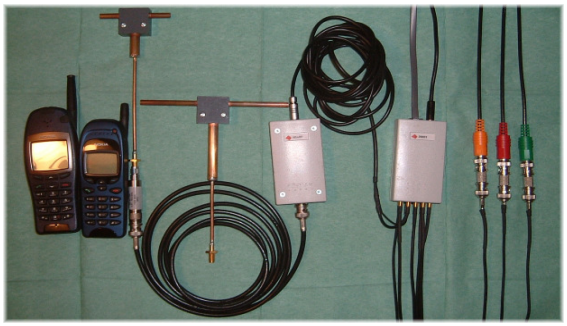
If the workplace has workers with AIMDs, appropriate precautions and protective measures should be taken.

FIOH study on "Mobile phone use of patients with implanted dual-chamber pacemakers"

Exposure sources GSM1800 and TETRA phones

57 patients with dual-chamber pacemakers from three manufacturers

- 21 patients wearing Medtronic, Inc. pacemaker
- 27 patients wearing St. Jude Medical, Inc. pacemaker
- 9 patients wearing Guidant, Inc. pacemaker



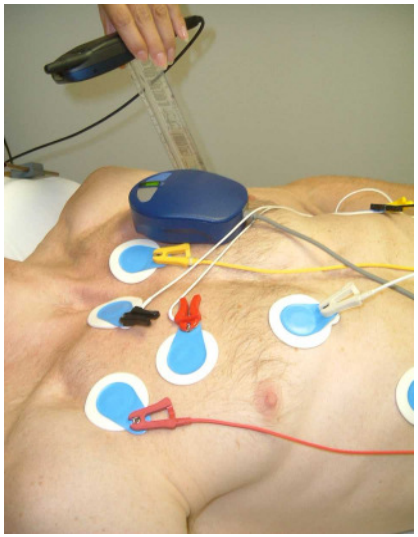
Parameters recorded during test

Body surface ECG, finger blood pressure, and telemetrically transmitted signals (e.g. atrial and ventricular ECG) recorded

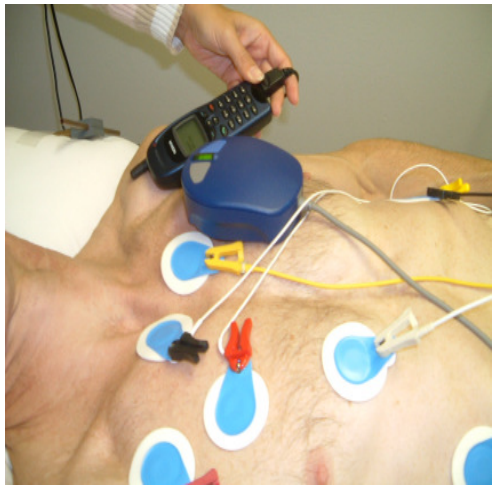
The blue pacemaker wand was connected to pacemaker programmer to receive and transmit data during pacemaker testing and programming

Phone positions during tests:

at 15 cm distance



0n skin above pacemaker



Results and conclusions

Normal use of GSM (1800 MHz) or TETRA (380 MHz) phones by dual-chamber pacemaker patients does not induce any significant clinical problems on intra-cardiac sensing and pacing even in situations, when mobile phone is close to cardiac pacemaker.

To overcome possible inteference in telemetry signals during pacemaker programming process, holding a mobile phone close to a pacemaker generator should be avoided.

C. Indirect risks

The EMF Directive requires that the employer shall consider risks associated with indirect effects of EMFs, such as the projectile risk caused by ferromagnetic objects in static magnetic fields

This may happen even at very low magnetic flux densities (> 3 mT).

These situations are typical at worksites of hospital personnel at magnetic resonance imaging (MRI) departments.

D. Electrically hypersensitive (EHS) workers

The EMF Directive does not address suggested long-term effects, such as perceived EHS symptoms

EHS problems seem to be associated more often with office work than with industrial jobs

Working environment in most factories much more complex than in offices

EHS persons cannot survive in high EMF surroundings?

WHO activities on EHS

The issue of potential electromagnetic hypersensitivity was discussed at a Workshop convened by WHO in Prague in October 2004.

The meeting was co-organized by the EMF-NET, COST 281 (Potential Health Implications from Mobile Communication Systems), and the Ministry of Health of the Czech Republic.

Conclusions of the EHS workshop

- EHS is characterized by a variety of non-specific symptoms that differ from individual to individual.
- The symptoms reported include
  - dermatological symptoms (redness, tingling, and burning sensations)
  - neurasthenic and vegetative symptoms (fatigue,tiredness, dizziness, heart palpitation, etc).

Conclusions (cont.)

- The symptoms are real and can vary widely in severity.
- No causal relationship has been established between the reported symptoms and EMF exposure.
- Whatever the cause, EHS can be disabling for the affected individual.
- Treatment should focus on the symptoms and the clinical picture.

Conclusions (cont.)

- Because EMF has not been established as a causative factor for the symptoms of EHS individuals, the focus of research should be the characterization of their physiological response.

- Although there is no scientific evidence of a causal link between symptoms and EMF exposure, governmental authorities should note that the symptoms of EHS persons are real.

Information on EHS

- WHO EMF-Project published a Fact Sheet on Electromagnetic Hypersensitivity on its website in December 2005

  www.who.int/mediacentre/factsheets/fs296/en/

- The proceedings of the Workshop were published by WHO EMF-Project and EMF-NET in June 2006 and are available on both websites

  www.who.int/pehemf/en/

  emf-net.isib.cnr.it

Thank you for your attention!