



Project no.

**SSPE-CT-2004-502173**

Project title

**EMF-NET: EFFECTS OF THE EXPOSURE TO ELECTROMAGNETIC FIELDS: FROM SCIENCE TO PUBLIC HEALTH AND SAFER WORKPLACE**

Instrument:

**Co-ordination action**

Thematic Priority:

**Priority 8, POLICY ORIENTED RESEARCH – AREA 2.3, Call Identifier FP6-2002-SSP-1**

## **WP2.2 Deliverable report D5ter: Report on studies on Hypersensitivity**

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Start date of project: March 2004      Duration: 48 months

Organisation name of lead contractor for this deliverable:

ENEA - Ente per le Nuove tecnologie, l'Energia e l'Ambiente (ENEA), Section of Toxicology and Biomedical Sciences, C.R. Casaccia, Via Anguillarese 301, 00060 Roma, Italy

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<b>Dissemination Level</b>		
<b>PU</b>	Public	<b>PU</b>
<b>PP</b>	Restricted to other programme participants (including the Commission Services)	
<b>RE</b>	Restricted to a group specified by the consortium (including the Commission Services)	
<b>CO</b>	Confidential, only for members of the consortium (including the Commission Services)	

EMF-NET/WP2.2: TECHNICAL WORKING GROUP (TWG):

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**Table 1.** Scientific Key-issues for Main Task 1List of deliverables with expected date of delivery<sup>3</sup>:

1. Cancer (In vivo studies: **D3a**, 08/05; **D3b**, 02/07. In vitro studies; **D4a**, 02/06; **D4b**, 02/07 ).
2. Reproduction and Development (**D4bis**, 08/06)
3. Nervous System and Behaviour (**D5bis**, 02/07)
4. Blood-brain Barrier (**D5bis**, 02/07)
5. Sensory Organs (ear, eye etc.) (**D5bis**, 02/07)
6. Cardiovascular system (**D5bis**, 02/07)
7. Immune System (**D5**, 02/06)
8. Endocrine System (**D5bis**, 02/06)
9. Subjective, non specific symptoms (**D5ter**, 08/06)

**The status of the current report**

This report will cover the following issues:

- Short summary and conclusions of the WHO workshop on Electrical hypersensitivity
- State of the research in Europe
- Future priorities

***Summary of the workshop on "Electrical hypersensitivity" in Prague, October 25-27, 2004***

To address the issue of potential electromagnetic hypersensitivity, the World Health Organization (WHO) convened a Workshop on "Electrical hypersensitivity" in Prague in October 2004. This meeting was co-organized by the European Commission Coordinated Action EMF-NET, the Action COST 281 (Potential Health Implications from Mobile Communication Systems) within the European Framework for Cooperation in the Field of Scientific and Technical Research, and the Ministry of Health of the Czech Republic.

The meeting comprised a 2-day international meeting, open to all persons who wished to contribute and/or attend. This was followed by a 1-day working group meeting, which included the speakers, the WHO secretariat and other interested parties.

The working groups discussed the following topics:

1. characterization, diagnosis and treatment
2. research needs
3. policy options

*Conclusions of the workshop with focus on the topics above*

1. EHS is characterized by a variety of non-specific symptoms that differ from individual to individual. The symptoms most commonly reported include dermatological symptoms (redness, tingling, and burning sensations) as well as neurasthenic and vegetative symptoms (fatigue, tiredness, concentration difficulties, dizziness, nausea, heart palpitation, and digestive disturbances).

<sup>3</sup> D5ter: EMF-NET Deliverable Code

The symptoms are certainly real and can vary widely in their severity. For some individuals the symptoms have a substantial impact on their lifestyle.

So far no causal relationship has been established between the reported symptoms and EMF therefore the term "Idiopathic Environmental Intolerance (IEI) with attribution to EMF" was proposed by the working group.

Whatever its cause, EHS can be disabling for the affected individual. Treatment should focus on the symptoms and the clinical picture.

2. 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.

As a definition of an EHS individual is still lacking, at present it is not possible to design adequate EHS epidemiological studies.

If provocation studies are to be considered, they should be properly designed and the protocol protocols should be approved by ethics committees.

3. National authorities should not ignore the plight of EHS individuals.

WHO issues a fact sheet that contains information on the symptoms of EHS individuals, indicating that, at present, these symptoms cannot be attributed to EMF.

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

The WHO EMF Project published on December 2005 a Fact-Sheet on Electromagnetic Hypersensitivity on its website (<http://www.who.int/mediacentre/factsheets/fs296/en/>), a workshop summary ([www.who.int/peh-emf/meetings/hypersens\\_summary\\_oct04.pdf](http://www.who.int/peh-emf/meetings/hypersens_summary_oct04.pdf)) and the Rapporteur's Report (Rapporteur Kjell Hansson Mild, Nat. Inst. for Working Life, Sweden, [www.who.int/peh-emf/meetings/hypersens\\_rapporteur\\_rep\\_oct04.pdf](http://www.who.int/peh-emf/meetings/hypersens_rapporteur_rep_oct04.pdf)).

The proceedings of the Workshop were published in June 2006 by WHO EMF Project and EC Coordination Action EMF-NET and are available on both websites (<http://www.who.int/peh-emf/en/> and <http://emf-net.isib.cnr.it>).

## **State of the research in Europe**

### *Ongoing studies*

There are a number of studies in progress addressing the issue of RF signals and subjective symptoms, a few of which involve people with EHS.

- 1) In the UK, the Mobile Telecommunications and Health Research (MTHR) programme was begun in 2001 as a consequence of one of the recommendations of the Stewart Report. One priority was to investigate sensitivity to RF fields associated with handsets and base stations. To that end, five provocation projects have been funded. The principal outcome measures include headache severity and effects on balance and disorientation. Thus far, results have appeared from one study, although further publications are expected shortly. In a double-blind, randomised study, Rubin and colleagues from Kings College, London, found no evidence to indicate that people with self-reported sensitivity to mobile phone signals were able to detect such signals or that they reacted to them with increased symptom severity. In this experiment, volunteers were exposed for 50 min using a standardised handset to either a 900 MHz GSM signal, a non-pulsing carrier wave signal, or to a sham exposure.

Rubin GJ, Hahn G, Everitt BS, Cleare AJ and Wessely S (2006). Are some people sensitive to mobile phone signals? Within participants double blind randomised provocation study. *British Medical Journal*, **332(7546)**, 886-91.

. Details of all the projects funded by MTHR can be found at  
< [http://www.mthr.org.uk/research\\_projects/funded\\_projects.htm](http://www.mthr.org.uk/research_projects/funded_projects.htm) >

2) The Swiss Research Foundation on Mobile Communication (FSM) has undertaken a replication study of the Dutch TNO study (Swiss UMTS Study). The Netherlands Organisation for Applied Scientific Research Building and Construction Research TNO study showed that exposure to UMTS signals in a laboratory set up influenced well being among people with EHS as well as among controls and is therefore of interest to follow up in this context. The results of the Swiss study were presented at the Bioelectromagnetics Society Annual Meeting in Cancun, Mexico, June 2006. In contrast to the Dutch study they could not confirm a short-term effect of UMTS base station-like exposure on well being.

< [http://www.mobile-research.ethz.ch/english/index\\_e.htm](http://www.mobile-research.ethz.ch/english/index_e.htm) >.

3) The Institute of Miljø og Arbejdsmedicin in Denmark have received funding from *The Danish Research Agency* from Copenhagen to do a replication of the TNO study. However, this study involves healthy subjects only. The study is due to finish 2006.

< [http://mobil.forsk.dk/portal/page?\\_pageid=382,1&\\_dad=portal&\\_schema=PORTAL](http://mobil.forsk.dk/portal/page?_pageid=382,1&_dad=portal&_schema=PORTAL) >

4) At the National Institute for Working Life in Sweden a questionnaire study has just starting comparing personality between people with general EHS and people only reporting symptoms in connection with mobile phone. It is due to finish 2007 (see also Johansson et al.: A comparison of personality and other individual-related factors in subjects with mobile phone related symptoms and subjects with electrical hypersensitivity - a questionnaire study, BioEM 2005, Dublin, June 20-24, 2005, p. 377)

< <http://bioelectromagnetics.org/bioem2005/bioem2005-abstracts-small.pdf> >.

In this context it is also of great interest to mention a review paper on the EHS issue: James Rubin and co authors have newly published a review of thirty-one EMF provocation studies of EHS undertaken between the years 1982 and 2003. In agreement with the WHO workshop conclusions, they found *no robust evidence to support the existence of a biophysical hypersensitivity to EMF*.

Rubin GJ, Das Munshi J & Wessely S (2005). *Electromagnetic hypersensitivity: A systematic review of provocation studies*. *Psychosomatic Medicine*, **67**, 224-232.

< <http://www.psychosomaticmedicine.org/cgi/content/abstract/67/2/224> >

In addition, a review by Irvine considered the definition and management of EHS, and another review from Rubin and colleagues examined possible treatments for EHS. Although information is very limited, it was concluded that the best evidence currently available suggested that cognitive behavioural therapy was effective for EHS patients.

Irvine N (2005). *Definition, Epidemiology and Management of Electrical Sensitivity*. A Report for the Radiation Protection Division of the Health Protection Agency. Chilton, HPA Centre for Radiation, Chemical and Environmental Hazards. ISBN 0 85951 570 2

Rubin GJ, Das Munshi J and Wessely S (2006). A systematic review of treatments for electromagnetic hypersensitivity. *Psychother Psychosom*, **75**, 12-8.

***Future priorities***

The lack of an established definition makes it difficult to distinguish between what appears to be different subgroups of EHS, e.g. people who relate their symptoms only to mobile phone use, people who relate their symptoms to EM fields in general, people who relate their symptoms only to VDT use, etc. A better characterization from a physiological and a psychological point of view is needed both to separate different subgroups and to form a basis for better examination and treatment. Baseline condition as well as the response to various stimuli should be considered.

There is a need for a bi-annual follow up of the ongoing studies in this area of research.