



ELECTROMAGNETIC 'HYPERSENSITIVITY'

For some time, a number of individuals have reported a variety of health problems that they have attributed to exposure to electromagnetic field (EMF) emissions, such as those produced by mobile phones and base stations. These individuals have often been described as being electromagnetic 'hypersensitive' (EHS).¹

The EMF levels to which these individuals are exposed are, according to the World Health Organization (WHO), generally well below recommended exposure limits and are certainly far below those known to produce any health effects.

Reported sensitivity reactions include a wide range of non-specific symptoms including dermatological symptoms (such as tingling or burning sensations), neurasthenic and vegetative symptoms (such as fatigue or concentration difficulties, heart palpitation and digestive disturbances).

In October 2004, the WHO conducted a workshop on EMF hypersensitivity in Prague, Czech Republic. Following that workshop, the WHO concluded:²

- EHS³ is characterised by a variety of non-specific symptoms that differ between individuals.
- While those symptoms are real, there is no scientific evidence of causal link with EMF exposure.
- There are no grounds to use EHS as a diagnostic classification.
- There is no indication that lowering internationally accepted EMF limits would reduce the prevalence of symptoms associated with EHS.

Subsequent to the WHO workshop, a team of scientists from the Justus Liebig University Giessen, Germany, has published a review of literature published between 2000 and 2004 pertaining to EHS and EMF from mobile phones. Of the thirteen studies that met the reviewers' criteria for experimental quality, no evidence of exposure and effect could be found.⁴ The reviewers concluded that:

¹ The WHO prefers the expression "Idiopathic Environmental Intolerance" (IEI) to EM hypersensitivity (see WHO Fact Sheet No 296: <http://www.who.int/mediacentre/factsheets/fs296/en/>); IEI does not imply causation of the symptoms being experienced.

² The workshop summary is available from the WHO's website at http://www.who.int/pehemf/meetings/hypersens_summary_oct04.pdf.

³ The WHO prefers the expression "Idiopathic Environmental Intolerance" to EM hypersensitivity, which implies a causal relationship between the reported symptoms and EMF: http://www.who.int/peh-emf/meetings/hypersens_summary_oct04.pdf.

⁴ Seitz, H, Stinner, D, Eikmann, Th, Herr, C, Roosli, M. Electromagnetic hypersensitivity (EHS) and subjective health complaints associated with electromagnetic fields of mobile phone communication---a literature review published between 2000 and 2004. Science of the Total Environment, June 20 [e-publication ahead of print], 2005, available at <http://www.sciencedirect.com>.



Altogether, there was little evidence for a particular population subgroup who is able to perceive electromagnetic fields in an experimental double-blind setting at a much lower threshold than the general population. No specific symptom cluster was found to be caused by exposure to mobile phone radiation.

Another recent review encompassed both radiofrequency (associated with mobile communications systems) and extremely low frequency EMF and listed 31 studies of note published before January 2004. This group of reviewers also found "no robust evidence to support the existence of a biophysical hypersensitivity to EMF".⁵

Based on the above-mentioned activities, WHO issued a fact sheet in December 2005 in order to properly advise the public on the subject.⁶

In June 2008 at the BEMS meeting a most recent analysis of a literature search for explanations of EHS concluded that "scientifically based evidence fails to support the assumption that EMF may play a role in complaints associated with EHS."⁷

In March 2009, the Health Council of the Netherlands addressed the issue in its yearly annual update on EMF and health as follows:

From the good quality scientific data emerges the picture that there is no causal relationship between exposure to radiofrequency electromagnetic fields and the occurrence of symptoms. However, there is a relationship between symptoms and the assumption of being exposed and therefore most likely with the risk perception. Nevertheless, the symptoms do exist and require a solution.⁸

Thus, the MMF supports WHO's view that treatment of sufferers who relate their symptoms to EHS should focus on the health symptoms and clinical picture by performing:

- A medical evaluation to identify and treat any specific conditions that may be responsible for the symptoms

⁵ Rubin, GJ, Das Munchi, J, Wessely, S. Electromagnetic hypersensitivity: a systematic review of provocation studies. *Psychosom Med.* Mar-Apr; 67(2): 224-32. 2005, available at <http://www.psychosomaticmedicine.org>.

⁶ <http://www.who.int/mediacentre/factsheets/fs296/en/>.

⁷ Gunnhild Oftedal. BEMS 2008 Abstract Book, 138; available at <http://www.bioelectromagnetics.org/bems2008/>

⁸ Executive Summary, Annual Update 2008: <http://www.gr.nl/samenvatting.php?ID=1813>



- An assessment of the workplace and home for factors that might contribute to the presented symptoms
- A psychological evaluation to identify alternative psychiatric or physiological conditions that may be responsible for the symptoms.

Also in 2009, the Swedish Radiation Protection Authority (SSI) stated in its Report⁹:

While the symptoms experienced by patients with perceived electromagnetic hypersensitivity are very real and some subjects suffer severely, there is no evidence that RF exposure is a causal factor."

In 2010, Rubin et al published a review of 46 studies on EHS titled "Idiopathic Environmental Intolerance Attributed to Electromagnetic Fields (formerly 'Electromagnetic Hypersensitivity'): An Updated Systematic Review of Provocation Studies"¹⁰ and concluded that

no robust evidence could be found to support this theory,

i.e., that symptoms described by IEI-EMF (formerly named EHS) sufferers are triggered by exposure to electromagnetic fields. Moreover, they urge that

a narrow focus by clinicians or policy-makers on bioelectromagnetic mechanisms is, therefore, unlikely to help IEI-EMF patients in the long-term.

Finally, it should be mentioned that despite of sometimes heard claims neither in Sweden nor elsewhere EHS has officially been recognised as a disease.

March 2010

⁹ The Swedish government reorganized the radiation protection work and the task of the IEG lies now under the newly formed Swedish Radiation Safety Authority (SSM).
<http://www.stralsakerhetsmyndigheten.se/Global/Publikationer/Rapport/Stralskydd/2009/SSM-Rapport-2009-36.pdf>;

¹⁰ Bioelectromagnetics 31:1 – 11 (2010), <http://www.ncbi.nlm.nih.gov/pubmed/19681059>